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CLINICAL SCIENCE AND OPHTHALMOLOGY

BY

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In the opening chapter of his recent book[1] Sir Thomas Lewis discusses the scope and methods of clinical science, and defines it as "that branch of medical science dealing with living human beings." My immediate purpose here is to indicate briefly how far a study of ophthalmology supports Lewis in this conception of clinical science.

It is generally admitted that observation without understanding and clear critical thinking is the chief obstacle to the scientific progress of clinical medicine. Such slipshod work is discredited in the laboratory, the incalculable gifts of which to medicine are discipline in scientific method, and training in the supreme importance of logical reasoning and the use of exact language in speaking and in writing. The nearest approach to laboratory training in clinical medicine is to be found in the study and practice of ophthalmology, because that subject offers a fine discipline in exact observation, in accurate measurement, and in precise statement. The eye, moreover, is easy of access, and can be examined very thoroughly; consequently it is a peculiarly favourable field for the study of disease at its onset.[2] The ophthalmic patient, too, is usually helpful, in so far as he is so much alarmed when he discovers anything wrong with his eyesight that he seeks medical advice with the least possible delay. When a patient consults an ophthalmologist he is, as a rule, suffering either from pain or from some disorder of the visual function. It will be convenient, therefore, to discuss our subject under these two headings.

Ocular Pain

Although pain cannot be measured by an instrument of precision, it is one of the most valuable symptoms of disease. It often saves time, therefore, to ask the patient at the beginning of the consultation if he is suffering pain. If the answer is in the affirmative the next question should be: How long has the pain been present? As pain is usually a danger signal, it ought to be investigated very thoroughly. It nearly always accompanies inflammation of the eye, but it may also be present without inflammation. Ocular pain may be described, therefore, as inflammatory or non-inflammatory.

INFLAMMATORY PAIN

This varies in character according to the site of the inflammation which is causing it. When the superficial structures of the eyeball are affected the pain is sharp and cutting, like a foreign body in the eye, and is aggravated by every movement of the lids. When the deep structures are implicated the pain is throbbing or gnawing, radiates along the branches of the trigeminus nerve, and is always most severe late at night or in the early hours of the morning. Differential diagnosis can be carried further by studying the accompaniments of the pain, among which are the presence of secretion or of photophobia, variations in the size or in the reactions of the pupil, tenderness on pressure over the ciliary region, increase in intraocular tension, impairment of sight, and vomiting or nervous collapse. In short, an experienced ophthalmic surgeon will usually be put upon the right road to diagnosis after he has listened to the patient's description of the character of the pain, and has observed the signs accompanying it; but in every case, in order to avoid pitfalls, he will not neglect to make a careful systematic examination of the eyeball.

NON-INFLAMMATORY PAIN

The older ophthalmic surgeons grouped cases of non-inflammatory pain in and around the eye under the general heading "asthenopia." They examined the patient very carefully, and so little in the symptomatology escaped their notice that in the textbooks of the time we can read clinical descriptions of asthenopia which are full and accurate. But, in spite of so much laborious note-taking, these old-time surgeons must often have felt puzzled as they listened to a tale of terrible suffering and could discover so little in the eye to account for it. As they could not explain the causation of the symptoms their prognosis was pessimistic, and based entirely upon a general impression of personal experience.

In the fourth edition of his *Practical Treatise on the Diseases of the Eye* William Mackenzie[3] wrote: "Asthenopia is an infirmity much more to be dreaded than many disorders of the eye which to superficial observation present a far more formidable appearance. The prognosis is on the whole unfavourable. It [the disease] has no tendency to wear itself out, and is probably incurable, although not likely to terminate in blindness." In clinical practice every patient suffering from ill-health must be treated, no matter how ignorant a doctor may be regarding the causation of the disease, and, as a rule, the less the doctor knows the greater the number of remedies prescribed. Consequently in the past asthenopic patients were submitted to so much drastic treatment, both local and general, that they must often have suffered grievously at the hands of their medical advisers.

All the confusion and the regrettable ignorance concerning asthenopia arose as a result of want of knowledge of physiological optics; but a new era in the history of the disease was about to dawn. Helmholtz, working in a little room in the anatomical department of the University of Königsberg, was inventing optical instruments and creating a new science. Donders, a professor both of ophthalmology and of physiology in the University

of Utrecht, was studying the same subjects from the standpoint of clinical ophthalmology. When these men began their work nearly all that was known of the subject could be summarized in very few words: concave glasses improved myopia and convex glasses presbyopia, the selection of the one or the other being arrived at for any given case, as a result of crude empiricism, much as a child suffering from asthenopia might discover by accident that he got relief from his symptoms by wearing his grandfather's spectacles. There was no real knowledge of the subject until Helmholtz and Donders settled the much-disputed question of the accommodation of the eye for varying distances.

The results of all this observational and experimental work were made public in 1864, when Donders[1] published his epoch-making book on the *Anomalies of the Refraction and the Accommodation of the Eye*. It was then demonstrated for the first time what is understood by the terms "refraction" and "accommodation," how abnormalities and the changes due to age are brought about, and how errors of refraction are neutralized by suitable lenses. That was a tremendous advance in knowledge, and it was due largely to the fact that Donders was an ophthalmologist as well as a physiologist. He was therefore in a very favourable position to utilize the discoveries in the laboratory in such a manner as to make the physiological mechanism underlying the symptomatology of asthenopia intelligible to ophthalmologists, and to put the prescription of spectacles upon a scientific basis.

Clinical science can show few more brilliant examples of a satisfactory solution of a pressing medical problem. So long as asthenopia was studied exclusively by the observational method the disease meant nothing more to an ophthalmologist than a miscellaneous grouping of a number of symptoms the physiological causation of which was not understood. Such knowledge, however, is only a cloak for ignorance, encourages the assumption of an air of finality regarding the whole subject, and conceals the need for research. Much of this apparent complacency arose because ophthalmologists were so familiar with the symptoms that they concluded they knew all about the disease. Clinical science is not so easily satisfied. It aims at correlating function with structure, and thereby seeks for the inner meaning of signs and symptoms. It follows, therefore, that the study of the mechanism of the production of symptoms must always go hand-in-hand with critical investigations into the causation of disease, and the motive power behind research is always the hope of discovering a remedy for the relief or the cure of the patient.

When symptoms are studied with that end in view clinical observation and research in the laboratory ought always to go together. Mackenzie[2] insisted that there must be no cleavage between research in the ward and research in the laboratory. There must be no attempt at domination on either side. Donders was able to accomplish so much because he combined in his own person the dual role of ophthalmologist and physiologist, and it follows that if the best progress is to be made a clinician should always be a physiologist in his own special line of investigation. But that does not mean that he will never require the assistance of an expert. He ought, however, always to be in a position to direct and supervise the laboratory investigations. The problem to be solved originated in the wards, consequently the clinician must be the judge of the kind of information required for its solution. Clinical science suffers when research work in a laboratory, whether physiological, pharmacological, or pathological, is carried on without the guidance of the clinician who is seeking the help. A chance meeting and a brief conversation between the two workers is not enough. It is as important for the laboratory worker to be a frequent visitor to the wards as it is for the physician to visit the laboratory. The closer their collaboration the better for the future of clinical medicine.

Disorder of the Function of Vision

From a physiological point of view the characteristic feature of vision is the reception of light by the retina. It is usual to compare the eye with a camera, and the retina with a photographer's plate. As far as it goes the analogy is perfect, because an image of an external object is formed on the back of the eye in the same way as it is formed on the photographic plate. From this point onwards, however, the analogy breaks down, because a single exposure to light exhausts the sensitivity of the plate, and, as it has within itself no power of renewal, it is useless after it has been used once. Moreover, a photographer knows that if he is to do good work he requires plates sensitized for different intensities of light. The difference in the behaviour of a photographic plate and of the human retina is due to the fact that from beginning to end the plate is governed by physical laws, whereas in the retina the physical stimulus of light has released a new type of activity, which is known as a "physiological response." When the eye is exposed to light a loss of sensitivity takes place in the retina similar to that which takes place in the photographic plate; but the loss is much less rapid, and if the patient is kept in the dark a fresh liberation of visual purple brings about a renewal of sensitivity. This function of the retina is called "adaptation to light," and is fundamental in the economy of vision.

The human eye is capable of adapting itself to almost any intensity of illumination; and the changes in sensitivity proportionate to the brightness of the light keep the retina functioning so steadily that a marvellous equability of sight is maintained in spite of the changes in lighting conditions, which are occurring constantly in the course of a day. The reaction of the eye to varying intensities of light will depend upon the health of the retina, and, if that be so, we might obtain an index of normality if it were possible to measure the time required for the recovery of loss of sensitivity after exposure to light. The retina, moreover, owing to its extreme delicacy of structure, is peculiarly susceptible to pathological influences, consequently an index of morbidity might also be obtained by similar measurements. To secure a quantitative measure of the light sense the patient must be kept in a dark room for at least half an hour before the examination. A special photometer is necessary, but the results will not be reliable unless preliminary precautions are taken to ensure dark adaptation of the retina beforehand. A quantitative examination of the light sense must of necessity, therefore, take up much time, and probably the tedious nature of the examination is responsible for so little attention having been paid to the light sense in ordinary clinical work.

It is possible to learn a great deal about both the light and the colour sense, however, by listening quietly to an intelligent patient as he describes his visual symptoms; and after he has told his story the ophthalmologist will learn still more by skilful cross-examination, supplemented by a careful scrutiny of all the signs and symptoms. Of course, any information regarding the light sense gleaned in this way is only qualitative, but the results of a clinical examination are usually sufficiently suggestive. If further information is required the ophthalmologist can take the patient to a laboratory, where a complete investigation can be made with the assistance of a physiologist.

The feeblest light capable of causing a sensation is the "light minimum," and the smallest increase in brilliancy of one of two lights is the "light difference." These two

are not interchangeable ; each has its own clinical significance, but any disturbance in either guides us to the retina. Increase in light minimum is evidence that its receptor or functioning system is at fault—layer of rods and cones ; while increase in light difference incriminates its conducting system—inner layers of the retina with the ganglion cells and nerve fibres. The rods and cones are the functioning units in the eye like the muscle fibre in the heart or the glomerulus in the kidney. That is important, because the first step in estimating the danger of derangement of function in any organ is to determine its functioning unit. The capillary supply[6] is of equal importance, and in the retina both receptor and conducting systems have each their own separate blood supply. The rods and cones are supplied by the choriocapillaris through the choroidal vessels, and the ganglion cells and inner layers of the retina are nourished by the capillaries associated with the retinal blood vessels. As the functional activity of every organ depends upon the quality and quantity of the blood circulating through its capillaries, and as the primary function of the eye is the reception of light, variations in the light sense ought to yield clinical results of the first importance.

Increase in Light Minimum

The light minimum is always disordered in diseases which interfere with the circulation in the choriocapillaris, thereby disturbing the nutrition of the rods and cones, and preventing the normal regeneration of the visual purple. The following are some examples.

An elderly man complains that he is unable to read his newspaper with comfort by ordinary daylight, and that for a considerable time past he has had steadily increasing difficulty in working in the evening. He thinks he requires a change of spectacles. He admits, however, that long before he had any trouble in reading he had noticed that when passing from a well-lighted room into comparative darkness he felt so blind for a time that he was very uncomfortable. He does not realize that he suffers from any colour defect, but remembers that quite recently, when taking a country walk, he saw cornflowers growing in a field, and was surprised to observe that they had lost their blue colour and appeared to be black. He is quite healthy, and says he never needs a doctor, but on cross-examination he admits that for the past year or longer he has known that he has had to be more careful, both in eating and in drinking, because he is now liable to slight discomforts, which he attributes to indigestion. He complains of black spots floating in front of his eyes, and says he is sure they are due to " liver."

It is found on testing that in a good light vision, both for reading and for distance, is almost equal to the normal standard, and objective examination of the eyes reveals nothing more than slight congestion of the fundus with a characteristic lack of translucency in the ophthalmoscopic picture. The urine contains crystals of oxalate of lime, and there is a want of a proper ratio between the output and the specific gravity. There is little disturbance in blood pressure, but it tends to be somewhat higher than normal.

The fundamental disturbance in this case is an increase in the light minimum. Experiments have demonstrated that there is " a fairly consistent increase in the light minimum with age,"[7] but obviously the patient here, although he may be close to the boundary line, has gone beyond the physiological limit. His symptoms are due primarily to the wear and tear of life with its cumulative auto-intoxications, which, from the clinical standpoint, are the result of prolonged functional disorder of the liver[8] and renal inadequacy. They depend, therefore, more upon the general make-up of the patient than upon external causes. Nowadays we are apt to forget the influence of the constitution on metabolic processes, and to look for an external cause to explain the occurrence of every symptom. In the case just described the patient's disabilities are due not so much to manifest ill-health as to a failure on the part of his constitution to adapt itself to his mode of life. It is not easy to demonstrate toxic substances in the blood, but the results of treatment by eliminant remedies are so satisfactory that the existence of some such cause working from within may be assumed.

An increase in light minimum is one of the earliest symptoms of primary glaucoma.[9] That is a very important observation, because it proves the existence of a morbid process affecting the functioning unit of the retina through its blood supply, and denotes the onset of the disease before its more characteristic signs and symptoms have revealed themselves. There is no essential difference in processes which are physiological and those which are pathological, and disturbance of light sense thresholds are at their onset on the borderland between health and disease. When a doctor, in the course of his daily work, meets a symptom with which he is not familiar he is very apt to look upon it as of morbid significance, whereas with larger experience he will discover that it may also occur in the healthy. Mackenzie[5] used to say that a symptom of disease in any organ is nothing more than the sensations that can be produced by over-exhaustion of the same organ in a state of health, and that the evidence of morbidity lies in the prematurity of its occurrence.

Like the fleeting attacks of dimness of vision and the appearance of rainbow-coloured rings surrounding a light, increase in the light minimum is a transient symptom, and on that account is easily overlooked and forgotten. Transient symptoms cannot, however, be studied too closely. They have an importance peculiarly their own, because when the patient can provoke them at will they are a perfect illustration of the experimental method of research, for the symptoms are the results of experiments performed by Nature herself in the laboratory of the patient's own body.

The onset of glaucoma is usually associated with some exalted state of mind—joyous or grievous—and as it is known that emotional disturbances and biochemical processes are very closely interrelated, it is easy to understand how toxins, circulating in the blood supplying the choriocapillaris, can inhibit the functioning of the rods and cones and interfere with the manufacture of an adequate supply of visual purple. Gjessing[10] relates the case of a man who, as regularly as he drank a large cup of strong black coffee before breakfast, " saw rings of colour when he lighted his pipe " and suffered from other symptoms premonitory of glaucoma. In this case the coffee was probably the exciting cause of the disturbances of metabolism—a local manufacture by the tissue cells of a histamine-like substance—underlying the production of the initial symptoms of glaucoma. If that be granted, it affords a rational basis for their onset.

Night-blindness may be a patient's chief complaint. In ordinary daylight he suffers no inconvenience, but as soon as twilight sets in he sees so badly that to all intents and purposes he is blind. The symptom is pathognomonic of retinitis pigmentosa, in which disease pathological changes occur in the bacillary layer of the retina, destroying the rods and cones and preventing regeneration of the visual purple. In some cases of night-blindness, however, an ophthalmoscopic examination reveals nothing abnormal, and it is in these cases that the recognition of the symptom—night-blindness—is of very great assistance in diagnosis.

The disease may be hereditary and congenital, and is often discovered accidentally. The parents have no suspicion that there is anything wrong with their child's sight until they notice that if he is out of doors after sunset he becomes so blind and helpless that he may have to be carried home. When night-blindness occurs in

adults, without the appearance of pigmentary changes in the retina, it is usually the result of dazzling light, overfatigue, and malnutrition. Dietary factors, which are in essence chemical factors, have an important influence upon nervous structures. Hippocrates recommended liver as a cure for night-blindness; and recent experimental research has demonstrated that the symptom can be produced in animals fed on a diet deficient in vitamin A, but that it disappears whenever cod-liver oil is added to the dietary.

In retinitis pigmentosa, however, the disease is steadily progressive, and the field of vision becomes more and more restricted until at length sight is blotted out completely. The retinal arteries are much contracted, and so much reduced in calibre that an insufficient supply of blood reaches the capillaries. It occurred to Royle[11] that in retinitis pigmentosa the choriocapillaris would be starved of blood, and that the rods and cones would in consequence suffer from want of nourishment. He thought that permanent vaso-dilatation of the ocular blood vessels produced by division of the thoracic sympathetic trunk at the level of the second thoracic ganglion would so alter the conditions underlying the disease that substantial benefit might be obtained. He has operated on several cases of retinitis pigmentosa by this method with such gratifying results that further experimental research is clearly indicated. Young,[12] when commenting on Royle's work, says: "It would seem that a similar effect might be obtained by a similar operation higher up—in the neck; it would hardly seem justifiable to employ the more difficult procedure of thoracic section when the sympathetic trunk higher up in the neck can be so much more easily and readily exposed." The original Claude Bernard experiment appears to secure all that is necessary.

Increase in Light Difference

A patient in this group sees best in a dull light. He is easily dazzled in bright light; a whitish-yellow mist rises like a cloud in front of the eyes and prevents him from seeing clearly. Towards sunset this sense of dazzling disappears, and he usually says spontaneously that he always sees best in the evening. When he meets his friends on the street in broad daylight he has much difficulty in recognizing them, and when he does see them he is shocked by their appearance—all healthy colour seems to have left the skin of the face, which looks like that of a corpse. The colour sense is obviously disordered, and the patient may remove all doubt on that subject by saying that when he is golfing he has no difficulty in seeing the white flags on the outward course, but that he cannot distinguish the red flags as he approaches the homeward greens; or, if he is a billiard player, he says that in certain positions round the table he has great difficulty in seeing the red ball.

That account of colour-blindness given so spontaneously by the patient can easily be confirmed by an examination in the consulting room. The defect, usually equal in both eyes, is called a central scotoma, because it is confined to the centre of the field of vision. The colour of a small disk of red or green paper cannot be distinguished in the line of direct vision, but is recognized at once in the periphery of the field. This central blindness for red and green is pathognomonic of increase in light difference, and is in sharp contrast to blindness for blue so characteristic of the presence of increase in light minimum. To anyone suffering from increase in light difference a bunch of sweet peas seems to be made up entirely of blooms of a blue colour: the hue of the reddish flowers is not recognized. As the disease progresses these colours assume a metallic lustre; red is said to glitter like gold and green to look like silver.

Clinical experience has taught us that these symptoms are due in a very large proportion of the cases to over-indulgence in tobacco and alcohol, but they also occur in those who have never smoked and have been life-long total abstainers. In every case, smokers and non-smokers alike, some toxic cause is active, but up till now all the efforts of the laboratory worker have failed to isolate individual toxins from the blood. Clinicians, however, still believe that the quality of the blood is intimately associated with metabolism, and that when there is derangement of metabolism, toxins quickly find their way into the circulating blood.

The patients are usually from 40 to 60 years of age, and both eyes are affected equally and simultaneously. The diagnosis must always be made from a careful examination of the symptoms, rather than from any ophthalmoscopic appearances which can be said to be characteristic. One of the most striking features of toxic amblyopia is the great contrast between the apparent gravity of the symptoms and the absence of any distinctive lesion which can be discovered with the ophthalmoscope. The prognosis is favourable; but the time required for recovery must be measured by months rather than by weeks.

Conclusion

In conclusion, let me repeat that when the functioning unit of the retina is affected the primary function of the eye suffers, and there is always danger of blindness; but when it is the conducting system of the retina that is chiefly at fault the prognosis is much more favourable. The extreme delicacy of the layer of rods and cones renders them very susceptible to every pathological influence, and when attacked they are very easily destroyed. The inner layers of the retina are more resistant; but when the noxious influence is sufficiently virulent they also are destroyed, and atrophy of the optic nerve is the result. The broad distinction between a lesion of the functioning unit and one of the conducting system applies to other organs as well as to the eye, and serves as a reliable guide both in prognosis and in treatment. A physiological study of the light sense enables us to make this distinction very easily in the eye, because in an individual patient a lesion of the receptor or functioning system of the retina is accompanied by increase in the light minimum, whereas a lesion of its conducting system is accompanied by increase in the light difference. The one cannot see in the dark; the other is very easily dazzled by bright light.

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J. Baumann (*Orvosi Hetilap*, December 8th, 1934) reports the discovery of a new gonadotropic substance occurring in the urine during pregnancy. In sexually mature rats this new preparation effects strong luteinization and development of the corpora lutea, but shows a temporarily negative effect on the development of the follicles. It does not produce the characteristic features of the Aschheim-Zondek reaction in infantile rodents, and is thus seemingly a different substance from the previously known gonadotropic products of the urine.

THE AETIOLOGY OF PUERPERAL INFECTION

WITH SPECIAL REFERENCE TO DROPLET INFECTION *

BY

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Since there is now little doubt that haemolytic streptococci cause the greater part of severe puerperal morbidity, recent workers have largely investigated the methods by which these organisms are introduced into the genital tract.

FitzGibbon and Bigger (1925), and Burt-White and Armstrong (1928), showed that the *Streptococcus haemolyticus* was a rare inhabitant of the vagina of the pregnant woman, and deduced that infection by this organism was almost always exogenous. Kanter and Pilot (1924) were the first to suggest that haemolytic streptococcal puerperal infection could be caused by droplet infection. Meleney and his co-workers supported this view. King (1930) showed a close correlation between the fluctuations of haemolytic streptococcal puerperal infection and of throat infection.

Throat Carriage

It is well known that haemolytic streptococci are found in the throats of apparently normal people, but the percentage of throat carriers varies with different observers (Table I). The Jessop Hospital, Norton, figures, giving

TABLE I

Author	Total Swabs	Percentage of Carriers of Haemolytic Streptococci	
		Nasopharynx	Tonsils
Blackburn et al., 1930	412	7.77	
" "	137	5.84	5.11
" "	252	11.90	
Williams, Nevin, and Gurley, 1921 ...	75	8.0	
Paine (unpublished) †:			
Group 1...	885	26.2	
Group 2...	197	47.7	
Manchester investigation:			
Group 1, with colds	110	17.27	
Group 2, without colds	1,731	13.23	
Grand total of swabs	3,799	17.05	

† Group 1 comprised all patients on admission to hospital. Group 2 comprised members of the hospital staff.

a higher percentage than the others, were obtained from the results of swabs from patients on admission over a period of three and a half years; each swab was taken as a sweep of the nasopharynx and both tonsils. Roughly, one in four of an urban population harbours this organism.

The relation between the seasonal variation of haemolytic streptococcal puerperal infection and that of throat carriage has been examined during this period, and a well-defined correspondence is seen between the two (Graph A, p. 244). The peak of infection occurs about April of each year; the graph also supports the observation of Williams (1932), who showed that the curve of incidence of puerperal infection followed that of respiratory infection.

Statistics thus indicate that throat carriage is related to haemolytic streptococcal infection in the puerperium. Are patients infected from their own throats or from the respiratory tracts of attendants? The figures shown in Graph B (p. 244) in part elucidate these points.

* The cost of this research was partly defrayed by a grant from the Medical Research Council.

This graph, giving the incidence of haemolytic streptococcal cervical infection among patients with positive throats, shows the same seasonal variation noted between the gross figures in Graph A. If patients with haemolytic streptococcal cervical infection habitually infected themselves from their own throats, then a graph approximating to a line parallel to the horizontal axis would be expected. This same seasonal variation must be taken as an indication that genital infection is not homo-exogenous but hetero-exogenous—that is, from the respiratory tracts of obstetric attendants.

This argument is supported by serological work of various observers, who show that haemolytic streptococci recovered from the respiratory tracts of obstetric attendants are to a large extent identical with those from patients' genital tracts (Table II). Of sixty-two cases of

TABLE II

Case Classification	Smith, 1931	Paine, 1931	Cournont and Sedallion, 1931	Smith, 1933	Paine (unpub.)	Edington (unpub.)	Total
No. of cases of haemolytic streptococcal uterine infection	18	2	6	31	4	1	62
No. of cases with source of organism of serological identity in upper respiratory tract of obstetric attendant	12	2	6	18	3	—	41
No. of cases with source of organism of serological identity in upper respiratory tract of patient	1	—	—	7	—	1	9
No. of cases with source of organism of serological identity in septic focus elsewhere	2	—	—	—	—	—	2
No. of cases with source undetermined	3	—	—	6	1	—	10

haemolytic streptococcal uterine infection, in forty-one organisms identical with the genital strain were present in the throats or nares of the obstetric attendants, who were presumably responsible for infecting them. It might be suggested that the attendant had infected his own throat from the patient's genital tract, thus accounting for the identity of the strains. This can be refuted by considering that among the cases recorded are groups associated with one attendant, who harbours organisms in his throat identical with the strain common to the genital tracts of the members of the group. Of sixty-two cases nine had organisms in the throats identical to those in their own cervices. Again it might be argued that throat infection followed uterine infection. This cannot at present be refuted, but one observation, by Edington (personal communication), merits recording in this regard.

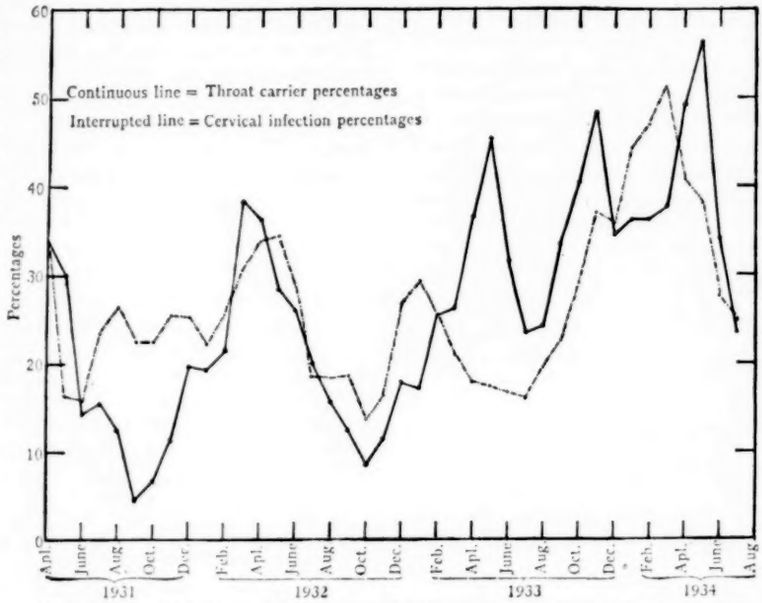
CASE RECORD

Mrs. S. was admitted to hospital on April 25th, 1933, two days before delivery, suffering from sore throat. Swabs were taken from the fauces and cervix on that date. The temperature rose thirty hours after delivery (April 28th), and a second cervical swab was taken.

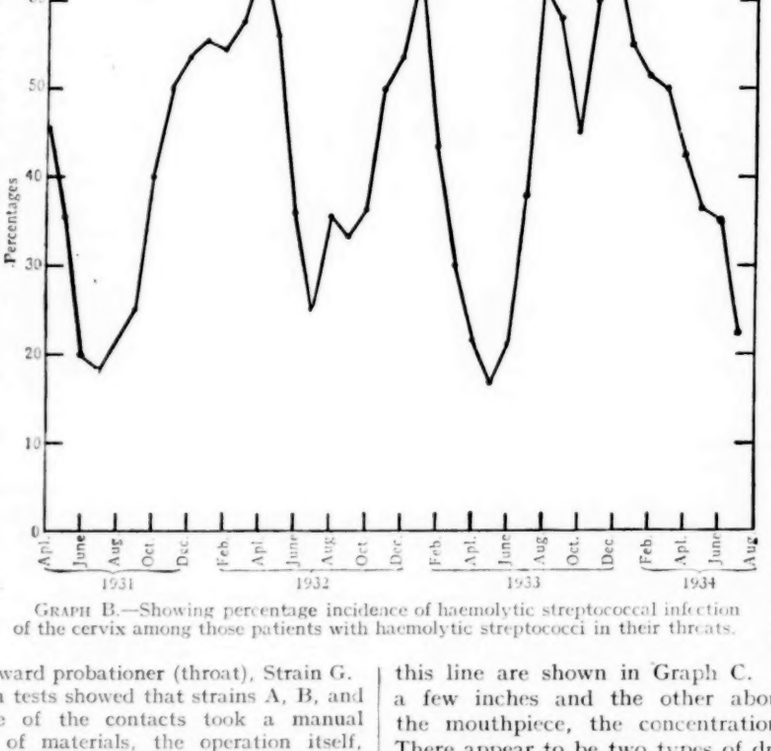
Bacteriological Findings.—April 26th: cervix—yeast and *B. subtilis*; throat—haemolytic streptococci and other organisms. April 29th: cervix—yeast and haemolytic streptococci. Reciprocal agglutinin-absorption tests showed the strains from both sources to be identical. There can be no doubt that she infected her own genitalia from her own throat.

This survey affords strong evidence that haemolytic streptococcal throat carriage is a very important source of infection to parturient women. The incidence of genital infection by organisms from the patients' own throats appears to be much smaller. There is, however, some difference of opinion as to how infection travels from such an external source. Colebrook (1933) doubts whether haemolytic streptococci can be sprayed from the mouth when there is no obvious tonsillitis, and quotes experimental evidence in support. Tests similar to his have been done in the present investigation. In a series of

fourteen, wherein subjects known to harbour these organisms in the throat without clinical signs were asked to cough at blood-agar plates held a few inches from their mouths, four positive results were obtained: but when shallow dishes containing 10 per cent. blood broth were exposed ten positives were obtained. Similar tests, holding the dishes ten inches in front of the chin, gave only one positive. This shows that spraying did occur, but that the momentum of the droplets was low. Colebrook suggested that soiling of the hands by nasal secretions from the handkerchief is a more probable method of transference. In one case here investigated there seems to be no doubt that direct spraying from the throat was the actual method of transference. In this case, recorded since the underlying principles are the same, the patient developed peritonitis following a laparotomy.



GRAPH A.—Showing seasonal variations in percentages of haemolytic streptococcal throat carriers and percentages of cases of haemolytic streptococcal infection of the cervix.



GRAPH B.—Showing percentage incidence of haemolytic streptococcal infection of the cervix among those patients with haemolytic streptococci in their throats.

CASE RECORD

Mrs. M., aged 42, was admitted to hospital on October 11th, 1933, with abdominal swelling and pain of six weeks' duration and eleven weeks' amenorrhoea. A diagnosis of fibromyoma was made, and a panhysterectomy was performed. The uterus showed a large intramural fibroid and a ten-weeks pregnancy. The patient developed peritonitis and died on the fourth day. All contacts were swabbed, including the pathologist who had been in the theatre during the operation but had failed to wear a mask; all other attendants were masked. Positive swabs were obtained from the following sources: Mrs. M. (peritoneum), Strain A; pathologist (throat), Strain B; anaesthetist (throat), Strain C; theatre sister (throat), Strain D; theatre nurse (throat), Strain E; theatre probationer (throat), Strain F; ward probationer (throat), Strain G.

Agglutination-absorption tests showed that strains A, B, and F were identical. None of the contacts took a manual part in the preparation of materials, the operation itself, or the after-care of the patient. The probationer wore a mask throughout. It would seem improbable that she was responsible. The evidence points to a direct droplet infection during the operation from the throat of the pathologist, who was previously unaware of being a throat carrier.

Mechanical Factors in Droplet Infection

In trying to determine the principles of the mechanics of droplet spray it was impossible to obtain standard conditions by asking carriers to cough or breathe at exposed culture material. Accordingly an apparatus was devised consisting of a painted plaster cast of a face, through which were bored three holes representing the nares and a partly open mouth. Into the back of the cast was fitted the wide end of a funnel, the narrow end being joined to an atomizer spray charged with a broth culture of *M. Lysodeikticus*. This organism is innocuous, and its colonies are easily recognized by their solubility in human tears (Fleming and Allison, 1927). Another advantage was that in testing materials for masking, the latter could be tied to the plaster cast in the same way as they are worn in actual practice. The apparatus, together with indications of planes along which culture plates were exposed, is shown on Fig. 1.

In the first series of experiments nutrient agar plates were exposed vertically at right angles to the lines AB, XY, CD, and EF, at varying distances from the mouthpiece. After counting the colonies developing on the plates, it appears that little spray passed upwards; most of the droplets fell rapidly, with the greatest concentration from ten to twenty inches from the mouthpiece. Very few droplets passed obliquely. In all subsequent tests plates were therefore exposed horizontally along the line CD. The results of a typical test with plates exposed along this line are shown in Graph C. At two distances, one a few inches and the other about fifteen inches from the mouthpiece, the concentration of droplets is high. There appear to be two types of droplets—one of low and one of high momentum.

Since momentum is a function of mass and velocity, the presence of these two groupings could be explained by either two sets of droplets, one of large and one of

small mass, or by one of high and one of low velocity. Investigating this point, both nostrils were blocked, spraying being performed through the mouth only. In Graph C it will be seen that by these means only the "long-distance" effect is obtained. Conversely, with the mouth blocked and spraying through the nostrils, the same long-distance effect was obtained. It would appear that the double grouping obtained with nares and mouth patent is due to the convergence of the buccal and nasal streams, wherein by collision some of the droplets lose their velocity and form a stream of low-momentum droplets.

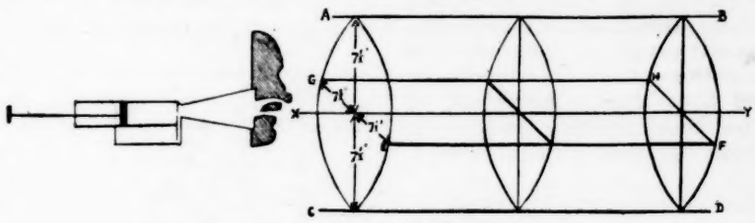
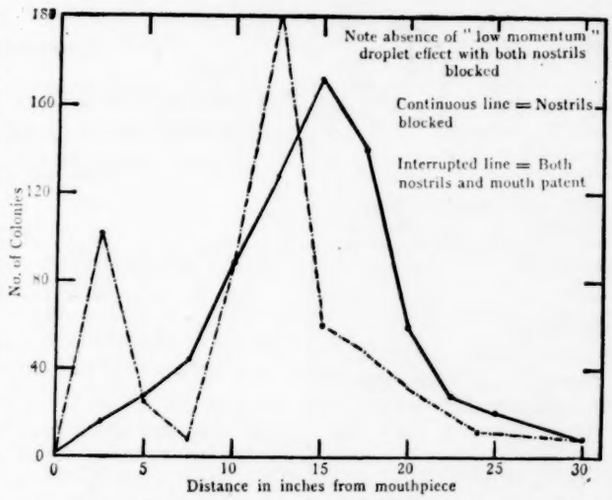
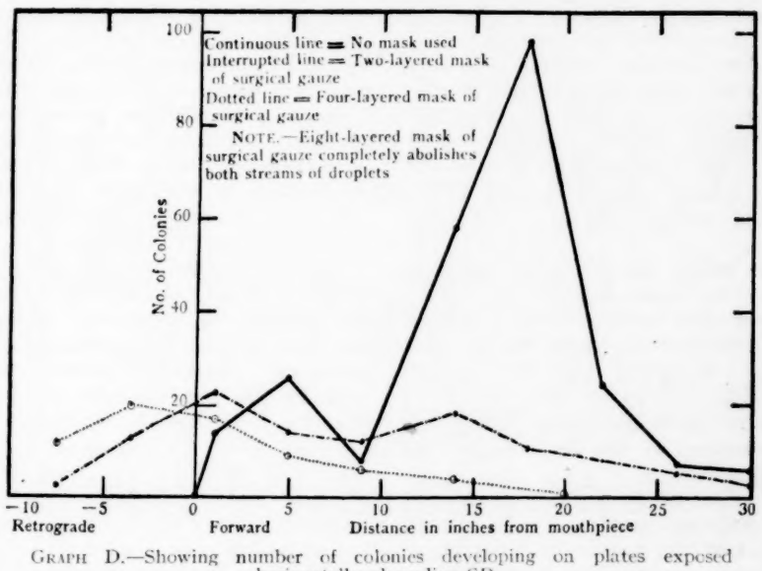


FIG. 1.—Diagram of testing apparatus.

Can these results be applied to spraying from the human nose and throat? A particle projected horizontally has two components of velocity—a horizontal velocity and a vertical—the latter a function of the force of gravity and the air resistance. Considering the vertical velocity—constant for all droplets with a constant depth—all droplets will reach the base-line at the same time. Considering the horizontal velocity, whatever the variations may be within the small range possible between that produced by the human cough or breath and that by the atomizer, owing to the retarding effect of air resistance—relatively great when compared with the initial velocities—the droplets rapidly attain the same horizontal velocity. After this the distance travelled is a function of that velocity and the constant vertical velocity. It appears, therefore, that the above work on the study of droplet projection applies to the study of droplet spray from the human nose and throat.



GRAPH C.—Showing number of colonies developing on plates exposed horizontally along line CD (see Fig. 1).



GRAPH D.—Showing number of colonies developing on plates exposed horizontally along line CD.

In practice, therefore, genital infection of patients from the upper respiratory tracts of accoucheurs could be accomplished by either high- or low-momentum droplets. Infection by the high-momentum stream would be by direct implantation on to the vaginal introitus. The low-momentum stream would infect the front of the operator's gown and his sterile gloves, transference to the patient occurring at the next manual interference. Masks must be designed, therefore, to arrest both types of droplets.

Experiments with Masks

Similar spraying tests were performed through materials tied to the plaster cast. The materials used were varying numbers of layers of silk, surgical gauze, and fine dental gauze. Oblong masks, 6½ inches by 4½ inches, were prepared, with tapes at each corner to tie the mask securely across the nose and cheeks and beneath the chin. One to eight layers of each material were employed. Both streams of droplets were arrested by either two layers of silk, eight double layers of surgical gauze, or four layers of fine dental gauze. With intermediate numbers of layers the amount of high-momentum spray was diminished, and there was a "shift to the left," as shown in Graph D. There was also a "shift to the left" of low-momentum droplets. The latter was not necessarily diminished, as is shown in the graph.

Thus the use of a mask of insufficient layers would be a menace, in that it would increase the amount of low-momentum droplets, with greater risk of contaminating the front of the operator's gown and gloves. In the above experiments masks have all been tied securely under the chin. With masks hanging freely down, a large down-flow of droplets occurred, indicating that masks should be well secured below. Using oblong masks, an air gap is present at both sides. Plates exposed at the edge of the mask showed a side-flow of droplets, detectable for the distance of six inches from the edge of the mask.

To test the effect of prolonged use on their efficiency, two-layered masks of fine dental gauze were used; at every fifth stroke of the pump culture plates were exposed. As the mask became more saturated it was rendered more efficient in arresting both types of droplets.

In reviewing the problems of masks it is clear that they should be of a sufficient number of layers of a suitable material to arrest both types of droplets, be designed to allow secure fastening under the chin, have a minimal air-gap at the sides, be comfortable to wear

for long periods, and be easily sterilized. Two layers of silk and eight double layers of surgical gauze form mechanically efficient masks, but fall short on the other counts. Trials have therefore been made with various patterns of four-layered fine dental gauze masks.

A mask of the following design, adopted for use in the Jessop Hospital, consists of an upper and lower part; where the two join, the corners are mitred to form a "snout." This has rendered the mask less oppressive than the oblong mask; it fits snugly at both sides and beneath the chin. Masks of this pattern have been made by Messrs. Robinson and Sons, Ltd., Chesterfield, to whom thanks are due for their unfailing patience in preparing many types before the final pattern evolved. (See Fig. 2.)

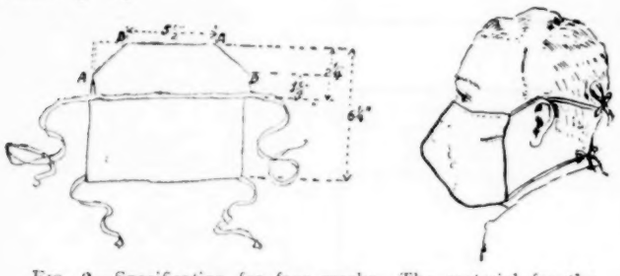


FIG. 2.—Specification for face masks. The material for the fine dental gauze face masks must contain fifty warp threads and forty-four weft threads per inch square of the bleached gauze, and weigh 600 grains per square yard.

Discussion and Conclusions

Haemolytic streptococci are undoubtedly responsible for a large part of puerperal morbidity. There appear to be several modes of infection. It may be carried by the hands of accoucheurs, by direct spraying from the nose or throat of attendants, or by the patient's own hands. Hand transference by the obstetric attendant occurs in four ways: by carriage of septic material from some other case; by the hands being the site of some trivial lesion, unsuspectedly harbouring haemolytic streptococci; by the hands having been soiled from the pocket handkerchief by haemolytic streptococci; and, finally, by his hands having been infected by low-momentum droplets from his own throat. The precautions necessary to overcome such external contamination are the use of suitable masks and the adherence to a rigid technique of hand toilet (Colebrook). It must be strongly emphasized that masking should be done before anything else—hand toilet, setting out of instruments, etc.—is commenced.

In some centres where masks are not used puerperal infection is uncommon. This would suggest that masks are of little value; but in some of these centres a rigid system of hand toilet is practised rigorously before every vaginal examination, etc., is made, thus dealing with hand contamination by low-momentum droplets. Their success depends upon the prevailing discipline. Where this cannot be guaranteed, masking as the first step in the aseptic toilet should be practised.

For institutions the value of bacteriological control cannot be overrated. Patients known to be throat carriers should be warned of the danger of hand transference. In cases of heavy upper respiratory tract infection the patient's hands should be treated with antiseptics. In addition, if every midwife and every maternity centre were supplied with a notice embodying simple details of a standardized technique, a marked diminution in the morbidity might be expected.

I would like to thank Professor M. H. Phillips for his help and kind permission to publish clinical notes, and Professor Edington for details of the case of infection following throat carriage.

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A CONCENTRATED LIVER EXTRACT FOR PARENTERAL ADMINISTRATION IN PERNICIOUS ANAEMIA

BY

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Since the demonstration by Minot and Murphy of the efficacy of liver in the treatment of pernicious anaemia, the active principle has been produced in concentrated extracts, although efforts to isolate the haemopoietic substance have so far not been very successful. The earlier extracts admittedly obviated the necessity of ingesting large quantities of liver, but their potency was unreliable, and many could be scarcely called palatable. These difficulties were eventually overcome, but the extracts were expensive. The subsequent discovery that dried stomach was effective by mouth was an important advance, but it still required the daily administration of preparations which were often unpleasant. Further, the question of absorption of the active principle of liver extracts from the gut was always in doubt in cases in which there was little response to treatment.

Another advance was the preparation of active extracts which could be administered parenterally, but here again the question of cost was a serious consideration for the the patient, and the necessity of frequent injections a handicap. The extract (pernaemon forte) which we have used in the treatment of six patients with pernicious anaemia overcomes to a certain extent both of these disadvantages. The preparation is a protein-free aqueous extract of liver, 1 c.cm. being extracted from 25 grams of liver and equivalent in activity to thirty to one hundred times this weight of fresh liver by mouth. In the following case reports it will be seen that only one injection is necessary to bring about marked clinical improvement and to raise the blood count to the normal level, and that maintenance doses are required only at one- or two-monthly intervals.

Case Reports

I

The first case was that of a married woman aged 39 years. There was a history of three years' gradual onset of weakness, palpitations, and vomiting. She was diagnosed as a case

of pernicious anaemia, and received liver and liver extracts by mouth at intervals for one year: no treatment for the last two years.

On admission there was marked pallor; the tongue was smooth; there were no signs of disease of the nervous system. Blood count—red cells, 2,180,000 per c.mm.; haemoglobin, 65 per cent.; colour index, 1.5; white cells, 7,000 per c.mm.; there was marked anisocytosis and poikilocytosis; no nucleated red cells. Van den Bergh (indirect): 2.4 units of bilirubin per cent. A fractional test meal revealed achlorhydria even after histamine. Wassermann reaction negative.

After a control period of two weeks the patient was given 10 c.cm. of pernaemon forte intramuscularly. On the third day after the injection the patient began to feel much stronger. The reticulocyte count began to rise on the third day and reached a maximum of 13 per cent. on the fifth. This was followed by a progressive rise in red cells and haemoglobin, until at the end of four weeks the blood count was: red cells, 4,900,000 per c.mm.; haemoglobin, 90 per cent. After this the red cells and haemoglobin began to fall, and a further 5 c.cm. of pernaemon forte was injected. The patient was then discharged, and attended as an out-patient. A blood count was done every two weeks, and further injections of 5 c.cm. were administered whenever the blood count began to fall. By this means the blood count has been kept at a normal level, and the patient states that she feels "better than she has done for years." The interval between the injections has varied from six to eight weeks.

II

A single woman, a cook aged 52 years, had a history of two years' gradual onset of tiredness and lack of energy; for eighteen months she had had an unpleasant taste in the mouth; five months before admission she had to stop work because of weakness; for one month there had been nausea and frequent vomiting; she became bed-ridden. There was occasional numbness of fingers; no sore tongue.

On admission pallor was marked; the tongue was smooth; there were no signs of disease of the nervous system. Blood count—red cells, 1,310,000 per c.mm.; haemoglobin, 38 per cent.; colour index, 1.4; white cells, 5,600 per c.mm.; there was marked anisocytosis and poikilocytosis, but no nucleated red cells. Van den Bergh (indirect): 4 units of bilirubin per cent. Fractional test meal showed achlorhydria even after histamine.

After five days the patient was given 5 c.cm. of pernaemon forte intramuscularly. On the third day there was marked clinical improvement; she began to gain in strength and to experience a feeling of well-being. The reticulocyte response began on the fifth day and reached a maximum of 12 per cent. on the sixth. The red cells and haemoglobin rose progressively for three weeks (red cells to 3,700,000 per c.mm., haemoglobin to 64 per cent.), and then improvement ceased. It was thought that the initial dose of pernaemon was insufficient. When another 5 c.cm. was injected the blood count rose steadily, with no further response of reticulocytes, to 4,500,000 red cells per c.mm., and 90 per cent. haemoglobin. On discharge she attended as an out-patient every two weeks. She received a maintenance dose of 5 c.cm. of pernaemon whenever the blood count began to fall. The interval between the injections has varied from four to six weeks. Her blood count at present is: red cells, 4,800,000 per c.mm.; haemoglobin, 100 per cent.

III

A costermonger, married, aged 55 years, gave a three years' history of gradual onset of tiredness and weakness, followed later by paraesthesiae in hands and feet, soreness of tongue, and dyspnoea on exertion. One year ago he was admitted as a case of pernicious anaemia and treated with hepatex, with improvement. On discharge he discontinued treatment, and his symptoms gradually returned.

On admission pallor was marked; the tongue was smooth; there were changes in the sensation over the feet suggesting early disease of the nervous system. Blood count—red cells, 1,830,000 per c.mm.; haemoglobin, 48 per cent.; colour index, 1.3; white cells, 5,000 per c.mm.; there was marked anisocytosis and poikilocytosis and a few normoblasts; no megaloblasts were seen. Van den Bergh (indirect): 2.4 units of bilirubin per cent. Fractional test meal: achlorhydria even after histamine. Wassermann reaction negative.

The patient was given 5 c.cm. of pernaemon forte intramuscularly. On the second day there was marked clinical improvement; on the third day the reticulocytes began to rise, and on the fourth reached a maximum of 22 per cent. There was a progressive improvement in the blood count for three weeks, the red cells rising to 3,060,000 per c.mm. and the haemoglobin to 68 per cent. After a second dose of 5 c.cm. of pernaemon, the blood count continued to rise, although no further reticulocyte response was observed. Five weeks after the first injection the blood count was—red cells, 4,610,000 per c.mm.; haemoglobin, 90 per cent. The patient was discharged, and as an out-patient his blood count has been maintained at a normal level by injections of 5 c.cm. of pernaemon at intervals of four to six weeks.

IV

A grocer, married, aged 54 years, for two years had had a gradual onset of lassitude and exhaustion; for three months there had been sore tongue, numbness of legs, muscular weakness, and fainting attacks.

On admission he was pale; the tongue was smooth; there were early signs of subacute combined degeneration. Blood count—red cells, 2,020,000 per c.mm.; haemoglobin, 60 per cent.; colour index, 1.5; white cells, 5,900 per c.mm.; there was poikilocytosis and anisocytosis, but no nucleated red cells. Van den Bergh (indirect): 0.4 unit of bilirubin per cent. Fractional test meal: achlorhydria even after histamine. Wassermann reaction negative.

The patient received 8 c.cm. of pernaemon forte, by intramuscular injection. Reticulocytosis began on the fourth day, and reached a maximum of 22 per cent. on the fifth. Following this there was a progressive rise of red cells and haemoglobin—4,800,000 red cells per c.mm. and 92 per cent. haemoglobin three weeks after the injection. On discharge he attended the out-patient department every two weeks. His blood count has remained normal with injections of 5 c.cm. at intervals of five to eight weeks. He has had no soreness of the tongue since treatment began.

V

A married woman, aged 62 years, had for four years complained of slight weakness, fatigability, and shortness of breath. For two years weakness had been more marked and walking difficult. For one year appetite had been failing and food had lost its taste; there was frequent nausea. For eight months there had been soreness of tongue, which has persisted; for four months there had been paraesthesiae in the hands.

On admission she was pale; the tongue was smooth; there were no signs of disease of the nervous system. Blood count—red cells, 2,000,000 per c.mm.; haemoglobin, 62 per cent.; colour index, 1.5; white cells, 6,000 per c.mm.; there was marked poikilocytosis and anisocytosis, and nucleated red cells were present, but no megaloblasts. Van den Bergh (indirect): 1.6 units of bilirubin per cent. Fractional test meal: achlorhydria even after histamine. Wassermann reaction negative.

After 8 c.cm. of pernaemon forte had been injected intramuscularly, reticulocytosis began on the third day, and on the fifth rose to a maximum of 15 per cent. There was a progressive rise of red cells and haemoglobin; and one week after the injection her general health was greatly improved. A second injection of 5 c.cm. was given four weeks after the first; a week later her blood count was: red cells, 4,700,000 per c.mm.; haemoglobin, 96 per cent. She has recently been discharged.

VI

A fish frier, married, aged 61 years, gave a history of shortness of breath and weakness for eight years. He was diagnosed as a case of pernicious anaemia six years ago and treated with liver; he greatly improved, but discontinued treatment. Later he had liver off and on when he felt his symptoms returning; but had had no liver for the past seven months. He had been bed-ridden for the past two months with dyspnoea and weakness. He complained of occasional tingling of the fingers; no soreness of tongue.

On admission there was marked pallor; he was delirious and unable to answer questions or talk rationally. The tongue was not smooth; there were marked signs of subacute combined degeneration. His condition was considered so serious that immediately on admission 10 c.cm. of pernaemon forte was injected intramuscularly. For three days he remained

stuporous, with an occasional lapse into noisy delirium. On the third night he was given 0.8 mg. of hyoscine, which had to be repeated in four hours. When he had recovered from the effects of the hyoscine he was completely rational, and remained so.

On admission his blood count was—red cells, 1,150,000 per c.mm. ; haemoglobin, 33 per cent. ; colour index, 1.35 ; white cells, 2,800 per c.mm. ; anisocytosis and poikilocytosis was marked ; there were a few nucleated red cells, but no megaloblasts were seen. Fractional test meal: achlorhydria even after histamine. Reticulocytosis began on the third day and reached a maximum of 26 per cent. on the fourth. During the next four weeks there was a steady rise of red cells (3,400,000 per c.mm.) and haemoglobin (70 per cent.). He was then given a further 5 c.cm. of pernaemon, and at the end of another four weeks his blood count was: red cells, 4,500,000 per c.mm. ; haemoglobin, 92 per cent. There was no very marked change in the condition of his nervous system: his gait was very ataxic, but his knee-jerks, which were previously absent, could now be elicited, and his plantar responses, which on admission were extensor, were now equivocal. To determine whether larger doses would produce any improvement in his nervous condition he received three injections of 20 c.cm. pernaemon forte at intervals of twelve days. During this time the right plantar response became more normal in type and his walking greatly improved. The patient has recently been discharged with a normal blood count.

Comment

In all the cases treated there was a dramatic response following a single intramuscular injection of pernaemon forte. On the third or fourth day the patients experienced a return of strength and a sense of well-being. This often preceded, but sometimes coincided with, the beginning of the reticulocyte response. Reticulocytosis usually started on the third or fourth day, and rose to a maximum on the fifth or sixth. In three cases the maximum response did not rise above 15 per cent. We have no explanation for this. The technique was the same throughout, and the reticulocyte count was performed daily at approximately the same time. It is improbable that the height of the response was missed. The degree of reticulocytosis bore no relation to the eventual rise of red cells. A reticulocyte rise was not observed after subsequent injections.

If the initial dose of pernaemon forte was adequate, the red cells and haemoglobin increased steadily after a single injection to reach a normal figure in four or five weeks. Two cases, however, which had received an initial dose of 5 c.cm. failed to touch a normal level until a second dose was given.

As a rule, an initial dose of 8 c.cm. of the preparation appears to be adequate, but in severe cases a dose of 10 c.cm. is desirable. When the blood count has returned to normal figures, it has been found possible to keep it at this level by means of a maintenance dose of 5 c.cm. injected intramuscularly at intervals varying from four to eight weeks. This interval varies not only from patient to patient but in each individual from time to time. A blood count should be done every two weeks, and any indication of a fall calls for a further injection. We have found that patients do not greatly dislike these injections, and are grateful not to be forced to take liver or liver preparations by mouth. Three patients in our series had discontinued taking liver or liver preparations by mouth, partly because of the nausea they produced and partly because of the expense. The soreness of the tongue, when present, rapidly disappeared, and has not recurred during treatment. The effect on subacute combined degeneration, which was present in Case VI, was doubtful.

The advantages of this preparation lie in the infrequency of the injections and the relative cheapness of its administration. With other parenteral preparations, in the early stages of treatment an injection is required every day, and later a maintenance dose is necessary at least once a week. With regard to the question of cost, this is of great importance to the patient, as treatment has to be continued for the rest of his life. In 1933 Dr. L. J. Witts[1] tabulated the cost of daily doses of different remedies for pernicious anaemia. The cheapest of these proved to be desiccated stomach, which costs 6.4 pence per day (retail). The cost of pernaemon forte compares very favourably with this. The retail price of 5 c.cm. is 8s. 6d., so that an initial dose of 8 c.cm. averages 5½d. per day for the first thirty days ; thereafter a maintenance dose of 5 c.cm. every four to eight weeks averages 3½d. to 1¾d. per day.

Summary

1. Case reports have been given of six patients with pernicious anaemia treated with pernaemon forte, a highly active protein-free extract of liver for parenteral administration.

2. After a single intramuscular injection, 8 c.cm. usually being adequate, the blood returned to normal within four or five weeks.

3. With a maintenance dose of 5 c.cm. every four to eight weeks the blood count could be kept at a normal level.

4. The cost of the preparation compares very favourably with that of other remedies for pernicious anaemia.

Our thanks are due to Professor F. R. Fraser for permission to publish these case reports, and to Dr. E. Graeme Robertson for confirming the neurological findings. One of us (A. W. S.) thanks the Medical Research Council for personal and expenses grants.

We are indebted to Dr. A. Macbeth of the Organon Laboratories for generous supplies of pernaemon forte.

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RETROGRADE JEJUNO-GASTRIC INTUSSUSCEPTION, ACUTE AND CHRONIC

BY

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Past monographs on this rare sequel of gastro-enterostomy have been scanty. Standard textbooks, such as Moynihan's *Abdominal Operations* and Hamilton Bailey's *Emergency Surgery*, ignore it. The acute variety is nevertheless a ghastly reality when it does occur, and well deserves its place on the roll of abdominal catastrophes. It means to the patient an impending tragedy from which, however, timely surgical aid can readily rescue him. This fact and its simple pathology should commend it to the memory of medical men. The literature has chiefly dealt with the acute type. This may be due, not to its greater frequency, but rather to its dramatic and often fatal nature compared with the chronic cases. Certainly both types deserve a sure place in the minds of surgeons who perform the operation that causes them and of physicians who may have to diagnose them.

Case Record

Interest in the subject has been aroused by the following case:

A married woman, 72 years of age, had abdominal comfort ever since an operation on the stomach eighteen years previously. Suddenly, on February 27th, 1934, and after a week's indigestion, she was seized with acute abdominal pain. Incessant vomiting ensued, enemata failed to evoke any response, and she was admitted to the Bristol Royal Infirmary as a case of acute intestinal obstruction on March 1st.

On inspection the tongue looked typical. Her abdomen was tumid, and peristaltic waves passed from the left towards the umbilicus, to the right of which, on palpation, a mobile lump was felt. Although it gave a sensation as of intussusception in the transverse colon, this idea was rejected, as melaena and other supporting features were absent.

Operating at once, under spinal anaesthesia, I found that the lump was movable and within the stomach. It was a retrograde intussusception of the jejunal effluent limb through the stoma of a posterior gastro-enterostomy. The swollen intussusceptum reduced with fair ease, was yellowish in colour, save for a few haemorrhagic spots, and was about 15 cm. long. Nothing unusual was found on subsequent examination of the anastomosis. To guard against relapse the upper end of the reduced segment was stitched to the short affluent jejunal loop. The latter was relatively fixed by proximity to the unyielding duodeno-jejunal flexure. During these procedures the foulest faecal vomiting continued, although the level of obstruction was but a few centimetres down the jejunum.

Recovery was smooth. On March 22nd a skiagram of an opaque meal was obtained in a further search for a clue as to the cause of the catastrophe, but it showed no peculiarities. She remained well when seen on July 4th.

Where, as in the above, a mid-abdominal lump raises the possibility of intussusception or cancer in the colon, such a source can be practically excluded by absence of melaena and caecal distension, or absolutely disproved by barium enema skiagraphy.

Incidence

Adding to the computation of Bettman and Baldwin[1] their own case, Chesterman's,[2] and the one now reported, there have been thirty-five acute intussusceptions of this rare variety recorded since the first in 1917.

Usually, as in my case, a long period of comfort has followed the original gastro-enterostomy; but there may have been a chronic history of pain and vomiting prior to the catastrophe, as in cases reported by Warren,[3] Shearer and Pickford,[4] or, as in Lewisohn's case,[5] the onset may be but six days after operation and the whole stoma intussuscepted. The condition is slightly more common in women.

Diagnosis

How completely the acute form has baffled our diagnostic powers is shown by Bettman and Baldwin, who write:

"In only one case did the physician assert that he made the diagnosis, although two other patients were able to diagnose the condition, being the subjects of recurrent intussusceptions."

Chesterman diagnosed his case.

The cases usually come to operation or post-mortem with the diagnosis of acute intestinal obstruction or bleeding peptic ulcer. Vomiting is the constant symptom, and if foul and faeculent the former label is applied, or if bloody then the latter. A lump and visible peristalsis, when present, obviously strengthen the former diagnosis.

As, without operation, the patients die, early recognition is vital. Fortunately, in those simulating intestinal obstruction, so urgent and offensive is the vomit that need for immediate operation, whatever the exact nature of the cause, almost compels surgical succour. However, exact pre-operative diagnosis will hasten operation, enable the surgeon to open the abdomen where access is best, and expedite the requisite manœuvres within.

Where heavy haematemesis dominates the scene and the prostrate patient gives a history of peptic ulcer, routine medical measures, usual in such cases, are likely to be adopted with fatal readiness. "Bleeding ulcer" at once comes to the mind of the doctor, and so powerfully is this treatment suggested by the situation that operation is shunned till too late. In the presence of a warning scar the doctor should pause and think again before dismissing the case as ordinary haematemesis due to peptic ulcer. Careful inquiry may then elicit the fact that what troubled the patient at the outset was not haematemesis but ordinary vomiting. This sequence of events characterizes gastric intussusception and is urgently surgical.

Radiography of a barium meal finds no useful place in the acute cases. It is scarcely feasible in those with obstructive symptoms, while to use it where ulcer might be the cause of haemorrhage would be rash.

Operation

Beyond reduction or resection when needed, White and Jankelson[6] conclude that no further measures seem desirable at the operation. Certainly, stitching together the afferent and efferent loops may appear a simple prevention against recurrence, but in some intussusceptions entero-enterostomy had already been performed at the time of gastro-enterostomy.[1]

Mortality

Adjusting the figures for operated cases given by Bettman and Baldwin to include their fatal case and Chesterman's and my successful ones, out of thirty patients nine died and twenty-one recovered. The unoperated all die.

Surgery, therefore, is well justified, and this despite our diagnostic destitution, up to date. Still better results may be forthcoming in the further cases that are bound to accrue as long as gastro-enterostomy continues.

Aetiology

Operation and post-mortem records shed no light on the cause of this complication. Von Brunn's view is that the disparity in size between the stomach and jejunum, comparable to that between the caecum and ileum, is a factor.

Lewisohn[5] quotes Drummond's explanation that "the presence of a stoma may make possible an occasional overrapid emptying of the stomach, with at the same time resultant irritation of the jejunal mucous membrane, sufficient to cause antiperistalsis." Against this is the absence in recorded cases of associated anastomotic ulcer, which is a characteristic sequel where gastric acidity is high. In its favour is the fact that intussusception has only followed operations done for simple ulcer and *never* for pyloric carcinoma, with its absent or low gastric acidity. The cancerous cases are fewer and inevitably short-lived, which should be borne in mind in weighing this evidence.

Chronic Jejuno-Gastric Intussusception

Attention has been drawn to this type by Ledoux-Lebard and Carcia-Calderon.[7] They quote two cases of persistent vomiting following gastro-enterostomy where operation revealed chronic intussusception. The onset of symptoms was preceded in one of the patients by months of comfort. In a third case the same condition was suspected but in a milder form, as jejunostomy was sufficient to rectify the trouble.

They point out that in chronic cases radiography after an opaque meal is quite feasible and highly informative. The intussusception displaces the barium meal and so produces a filling defect. The rounded shadow tends to change its position on palpation and is marked with striations due to the folds of jejunal mucosa. This evidence is characteristic and superior to the clinical signs, which are intermittent owing to spontaneous reduction.

The authors also emphasize the dictum: "Where gastro-enterostomy function is defective, early radiography is needed." They claim that this investigation is likely to show a higher incidence of chronic intussusception than is usually imagined among cases of recurrent vomiting after gastro-enterostomy.

Summary

1. Jejuno-gastric intussusception is a well-established late complication of gastro-enterostomy for ulcer. It occurs in acute and chronic forms. The former is fatal if not operated upon.

2. Diagnosis is possible, depending on the rule: "Where haematemesis or obstructive symptoms appear after gastro-enterostomy, think of intussusception."

3. If, in sudden acute intestinal obstruction, the following triad is present, then acute retrograde intussusception should be diagnosed:

(*a*) Epigastric scar.
(*b*) Visible peristalsis from left to right.
(*c*) A palpable mobile swelling about the mid-abdomen.

4. The chronic form is to be remembered as one of the causes of recurrent vomiting after gastro-enterostomy. Early radiography is demanded in such cases and will reveal the intussusception, if present, and pave the way for a curative operation.

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RETROGRADE INTUSSUSCEPTION OF THE JEJUNUM FOLLOWING GASTRO-JEJUNOSTOMY

BY

R. K. DEBENHAM, M.D., F.R.C.S.

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Retrograde intussusception of the jejunum as a late complication of gastro-jejunostomy is a rare, but nevertheless important, condition. Only thirty-five cases (including the following case) have so far been reported.[1 2] It is surprising that, although gastro-jejunostomy was first performed in 1881, this complication was not reported until 1917.

Nineteen of the reported cases were females and only thirteen were males; the average age was 43, the youngest patient being 21 and the oldest 75. Intussusception occurred at variable times after the original operation: six days was the shortest period and sixteen years the longest. The type and size of stoma apparently makes no difference. The length of intestine which was involved varied from only four or five centimetres to two metres.

The symptoms are rather characteristic: abdominal pain is marked—it usually comes on suddenly, is moderately severe, and may be agonizing. Vomiting almost always occurs, and is usually persistent; in eighteen cases it was bloody. Shock is an almost constant accompaniment. A tumour was palpable in twelve cases. Most patients were operated upon with a diagnosis of high intestinal obstruction; two were at first erroneously diagnosed as bleeding peptic ulcers. In two cases the condition recurred, and the diagnosis was then accurately made by the patients themselves. Operation was performed in thirty cases, with eight deaths and twenty-one recoveries (the result in one case was not stated). The condition was discovered at necropsy in five others. Early operation was almost always successful.

Case Record

History.—The patient was an unmarried woman aged 44. Seven years previously a chronic gastric ulcer had been excised from the lesser curvature, and anterior gastro-jejunostomy had been performed. (The appendix had already been removed.) She remained fairly well, except for some abdominal pain soon after food, and occasional vomiting, until she was admitted into hospital as an emergency. Twenty hours previously she began to have severe abdominal pain around the umbilicus, following pork for dinner. The pain gradually increased, and was associated with repeated vomiting. The bowels were opened normally. Whilst in hospital she was kept under observation for twelve hours, during which time she had no pain, but vomited three times; the last two vomits were of brownish small-intestine type.

Condition on Admission.—The patient was weak and shocked, with a temperature of 97.5° and pulse of 72. There were no other abnormal physical signs, except for a little resistance over the upper part of the left rectus muscle. Whilst under observation the temperature and pulse were normal. An ill-defined soft swelling appeared under the left upper rectus, with slight peristalsis in it, and a diagnosis of high intestinal obstruction was made. There was no rigidity or tenderness at any time.

Operation (thirty-two hours after onset).—A retrograde intussusception of the upper jejunum was found. The apex was situated about eighteen inches from the old gastro-jejunostomy stoma; about six inches of jejunum had been intussuscepted upwards towards the stomach, but had not reached the stoma. The obstruction had caused dilatation of the stomach and jejunum above the lesion. The intussusception was easily reduced. The patient made an uninterrupted recovery, and has remained well, except for vague indigestion, for the past two and a half years.

Comment

It has been stated elsewhere[1] that this condition is probably not so rare as the reported cases would lead one to suppose. The treatment is operative, and if operation is undertaken early 90 per cent. of patients recover. Therefore the condition should be remembered when symptoms and signs of high intestinal obstruction occur following gastro-jejunostomy. Another possible cause of high intestinal obstruction following an anastomosis is an internal hernia through the hole made in the mesocolon; I have seen two cases of this latter condition, both of which recovered after operation. Early diagnosis and the use of continuous intravenous saline glucose (5 per cent.) is of the utmost value in cases of obstruction.

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A. Le Tensorer (*Thèse de Paris*, 1934, No. 811), who records fifty-five cases of nephritis in secondary syphilis in patients aged from 17 to 49, states that the aetiological diagnosis of nephritis in syphilis is difficult owing to the possibility of even a minute dose of mercury, novarsenol, or bismuth giving rise to this complication. On the other hand, when the aetiological diagnosis is established with certainty the prognosis is easy. Nephritis due to intolerance of the specific drug will be aggravated by treatment, which, on the other hand, will cure the nephritis due to syphilis as well as the other manifestations of the disease.

PROBLEMS OF THE CLIMACTERIC*

BY

J. WHITTINGDALE, M.B., F.R.C.S.

Of the vagaries of the ovaries there is no end, while the symptoms of the menopause present problems to every practitioner of medicine, whether orthodox or heterodox. This twilight of femininity is treated in the majority of textbooks with a respectful silence ; the average teacher, be he physician or gynaecologist, hints to the waiting student that it is a nuisance that has to be tolerated, and sums up its treatment with the text of mist. pot. brom. et valer.

The physiologists tell us that the cyclic activity of the ovaries is controlled to some extent by the anterior lobe of the pituitary gland, which also provides a thyrotropic hormone to stimulate thyroid secretion. It is so far unknown to what extent, if at all, the normal menopausal changes in the ovary are due to pituitary failure. The adrenal cortex has also some association with ovarian function: it is well known that certain tumours of the adrenal cortex manifest themselves in female children by the precocious onset of menstruation and the development of secondary feminine characteristics. At the other end of the scale certain of the climacteric characteristics—notably hyperpiesia, cutaneous vaso-dilatation, and cardiac acceleration—are probably caused by overactivity of the sympathetic system and the adrenal glands.

The climacteric may be described as the smouldering fire of the endocrines, in which, from time to time, certain embers flare up, emit sparks, and subside into cold ashes. The age of onset of the menopause varies considerably, but seems to bear some relation to that of the onset of puberty: a patient who has arrived early at puberty may meet the menopause at 40 ; one who has been late in developing may not be able to say good-bye to the plague until her sixtieth birthday. The result of this irregularity is inevitable: the practitioner consulted by a woman patient between the ages of 40 and 60 is apt to discount symptoms of which she may complain as being due to "change of life." Whereas there is no doubt that all symptoms stand out more sharply against the gloomy background of the climacteric, there is no excuse for those who do not set to work conscientiously to eliminate possible organic causes for these symptoms.

Every day women come to all of us with voluminous complaints of strange and remarkable feelings, which mean so much to them that they are prepared to talk for hours to a sympathetic listener, but, if rebuffed, are apt to take their revenge by writing reams of heavily underlined, badly punctuated, and somewhat incoherent detail. Let us try, if we can, to carry out a systematic physical examination, in order that we may assure ourselves that the various systems of the organism are not sharing the degeneration of the genital tract.

Need for Systematic Examination

Many of these patients are the subjects of chronic infection, particularly of the paranasal sinuses, teeth, gastro-intestinal tract, and urinary tract. It is necessary to stress the importance of the first and last of these systems. We have all heard how careful investigation of chronic mental cases has revealed the relatively high incidence of sinus infections, while the treatment of these foci has resulted in the restoration of mental health. Similarly, many women who feel tired and depressed, perhaps with occasional bouts of fever, are found to harbour *B. coli* and pus in their urinary tracts. The teeth are usually suspect, and the presence of rheumatism, neuritis, or halitosis is sufficient evidence to transfer the patient to a competent dentist who does not despise the help of a radiologist.

As for the gastro-intestinal tract, woman has been described as a constipated mammal with a pain in the right side. We need not necessarily install a colon station in our garages or back kitchens, but, by means of increased fluid input, psyllium seeds, and lactic-acid-bacillus emulsions, we can do something to help their sagging, bulging colons and clear their sallow skins. Our physical examination will also aid us to eliminate the ordinary chronic diseases, such as pulmonary tuberculosis, Addison's anaemia, Bright's disease, and diabetes mellitus, which may give rise to symptoms of fatigue, dyspepsia, sweating, and similar menopausal complaints.

Two Common Types

When we have cleared the air in this way we may be able to recognize a clinical type. One of the most common types among the well-to-do is that presenting the triad of obesity, hyperpiesia, and arthritis of the knee-joints. These cases are particularly amenable to treatment by diet and thyroid administration, and need not detain us.

Another common type is that of the small, thin worrier—the woman whose children have gone out into the world and whose husband has been nagged by excessive mother love into the public-house, the club, or the dog-track. This is the woman who cannot sleep, suffers from noisy belchings, palpitations, and strange feelings that commence in the pit of the stomach and go to the top of her head, where she experiences a sensation of weight and oppression. She commonly complains that she has curious sinking feelings, and would like to fly away. She lives on strong tea, aspirin, cigarettes, or brandy. It is reasonable to suppose that she suffers from excessive adrenal activity, disturbance of the solar plexuses of the sympathetic, and hyperglycaemia, due to excessive mobilization of glycogen. This type is benefited by bromides, sumbul, and valerian to depress the sympatheticotonia, while her nips of brandy or cups of tea should be replaced by administration of boiled sweets or glucose.

These two examples of clinical types are distinctive, and should be treated quite differently—the first by starvation, the second by feeding.

Development of a Neurosis

Finally, we may consider quite briefly the psychological manifestations. As has been hinted above, the woman at the menopause is often lonely, either unmarried and brought to bitter realization that the male has passed her by, or else, having been married and brought up her family, these have left the home to fend for themselves and she no longer has an outlet for her natural maternal devotion ; her husband, if at all active, will tire of her solicitude and fly ; if passive, will meekly acquiesce in her tirades and indulge her curious fancies. The result is, in some cases, the development of a definite neurosis, most commonly melancholic, sometimes manic-depressive, and almost always an obsession that the patient is the victim of some obscure or malignant disease.

In the present state of society the treatment of these cases is almost impossible. Early treatment is offered at the out-patient clinics of optimistic mental hospitals, but the name is in itself sufficient to prevent most of these patients from going near the physicians who are best qualified to help them. It would appear that the underlying factor in these psychopathological cases is lack of

* The substance of a paper read to the West Dorset Division of the British Medical Association.

education: the woman is deprived of her family cares and does not know how to fill the gap. We offer the doctrine of sublimation, gardening, literature, the fine arts, the Church, but she has not the mental capacity or training to enjoy them. The most successful navigators of the menopausal rapids are those women who have been adequately educated and can direct their maternal instincts to social welfare, their physical activities to gardening or "Guiding," their fantasies to literature or Anglo-Catholicism.

Clinical Memoranda

Severe Dyspituitarism in a Child

A case of dyspituitarism of Fröhlich's type in a child has recently come under my care. The condition is so severe that I think the particulars would interest your readers. The child is now 2 years and 9 months, and weighs 7 st. 2½ lb. Below is a photograph of the child with his mother and also brother of 4½, who is quite normal.

At birth the child weighed 7 lb., and his mother tells me she had a normal labour. The baby, however, immediately began to put on weight at an abnormal rate. The following figures will give some idea of his progress: at 1 month, 9 lb. 8½ oz.; 3 months, 16 lb. 6 oz.; 6 months, 29 lb. 8 oz.; 10 months, 46 lb.; 1½ years, 63 lb. 12 oz.; 2 years, 76 lb. 4 oz.; 2½ years, 91 lb. 8 oz.; 2¾ years, 100 lb. 8 oz.

That this increase in weight is due to increase in adipose tissue and not to skeletal over-development is shown by the fact that the child's height is only 36½ inches, his skull circumference is 21½ inches, and he has small feet, and hands with tapering fingers. His skin is soft and his hair fine. At this age, of course, it is impossible to gather much information from the condition of the sexual organs, but so far they appear normal; both testicles are descended.

The condition would appear to be one of hypopituitarism, a true case of Fröhlich's syndrome. Whether it is caused by a tumour I have not yet been able to satisfy myself. There are no signs of tumour, no optic atrophy, no oculomotor palsies or epilepsy, but I have not yet been able to obtain a satisfactory *x*-ray as the child is so restless. The urine is sugar-free. Moreover, the mentality of the child seems to be normal; he is clean, talks, sings hymns, feeds himself (he is left-handed), and has a good memory. The teeth are normally developed and good. He is not able to walk or stand, but this is scarcely to be wondered at with his enormous bulk; he can crawl and kneel, and is very active. I hope to be able to get this child into a London hospital for investigation and treatment, as I think his condition could be greatly improved, but at present his parents are very unwilling to let him go.

DUDLEY W. BOSWELL, M.D., D.P.H.

Gastric Carcinoma with Duodenal Ulcer

The combination of gastric carcinoma and duodenal ulcer seems sufficiently rare to warrant record.

A woman, aged 59 years, was admitted to the Salford Royal Hospital for gastrostomy, a diagnosis of carcinoma of the lower extremity of the oesophagus having been made. Two hours after admission, whilst in the bath, she complained of sudden and very severe abdominal pain. On inspection she indicated the epigastrium as the site of intense pain; respiration was shallow and the abdomen motionless. On palpation rigidity and tenderness were marked, more especially in the epigastric region.

There was no doubt that a perforation had occurred, but it was suggested by those who had seen her shortly after the onset of the pain that its position indicated the pyloric rather than the cardiac end of the stomach as the site of perforation. This opinion proved to be quite correct, for at operation, although there was a large and fixed carcinoma of the cardia, the perforation was of the anterior wall of the duodenum immediately beyond the pylorus. The opening was utilized for a duodenostomy by Witzel's technique, and recovery from the operation was uneventful.

Manchester. E. D. MCCREA, M.CH., F.R.C.S.

Use of an Omental Plug in Perforation of Stomach

Recently I had a call to Clydach War Hospital to operate on a man, aged 43, who had "perforated" about an hour previously. His doctor, Dr. Morgan, who gave the anaesthetic, had great difficulty in overcoming the rigidity. The perforation was high, near the oesophagus, and, added to these difficulties, I was without an assistant.

A curved intestinal needle on a holder snapped on attempting to suture the perforation. I took a stronger, round-bodied needle, but it tore up the friable stomach wall. An omental tag was then fixed on to a chromic ligature on a curved needle. This needle was passed through the perforation, into the stomach, and forced through a healthy portion of stomach a little distance away. The ligature was then pulled sufficiently to cause the omentum to plug the hole. It was then hitched to the stomach wall. One further stitch was put in the neighbourhood of the plug as it entered the perforation.

The following day the temperature rose to 100° F., and remained up for forty-eight hours. There was some hiccup, which was relieved by atropine and morphine; otherwise the patient made a satisfactory recovery and caused no anxiety.

I have always felt that the usual graft placed over a suturing would readily be floated up if there was a gush of fluid, unless it were well sutured, whereas the plug readily blocks the opening without the need of elaborate suturing. Some years ago, at the same hospital, I had to deal with a pyloric perforation, where the difficulties of friability and lack of elasticity rendered suturing impossible, and for the first time I adopted this method. The result was most gratifying. I only felt justified in using this unorthodox method as a last resource, and have therefore avoided it when the more usual measures have been possible. I have never heard of the method being used before, and I now wonder whether perhaps this simple procedure might be all that is needed for the closure of a perforation. It has the advantage of simplicity and the absence of puckering. It would be interesting to know if others have tried this method and would follow the suggestion that it might be tried in cases where the ordinary procedures are impracticable.

Swansea. C. LEONARD ISAAC.

Reviews

BERI-BERI HEART

"The Study of the Beri-beri Heart,"[1] by K. F. WENCKEBACH, is a further extension of the lecture published in this country some six years ago. Although beri-beri is not met with here, the peculiar nature of the cardiac complications occurring in this disease cannot but interest anyone concerned with diseases of the heart. In this monograph Professor Wenckebach describes in vivid and attractive manner the results of his personal investigations in Java into this curious condition. Persons suffering from beri-beri are prone to rapid and fatal heart failure, known in the Tropics by the Japanese name of "shoshin." The characteristics of the failure are entirely that of the right side of the heart. The clinical features are restlessness, with intense venous engorgement, pronounced breathlessness, and death in a few days. Other cases run a longer course, and in these there is great dilatation of the right auricle and ventricle, but no involvement of the pulmonary circulation, nor of the left ventricle.

Microscopically there is oedema of the connective tissue in the right side of the heart, and swelling and degeneration of the muscle fibres. Clinically there seems to be an increase of the venous return to the heart, with which the right ventricle is quite unable to cope. In fact, the breakdown of the heart is due to muscular weakness and loss of tonus, while overwhelmed from the veins by blood at high pressure. The Aalsmeer test, by injecting adrenaline, seems to throw some light on the cause. It was found that the symptoms were greatly enhanced after subcutaneous injection of adrenaline. The explanation offered was that in beri-beri more capillaries than usual are open at the periphery, and the increase in the cardiac output resulting from the injection made the flow from the arterial side into the veins all the greater. But apart from these disturbances of function, the conclusion arrived at as to the cause of the disease is that a retention of water takes place in certain predisposed tissues—in particular, the striped muscle fibres and the nerves.

This most interesting study can be strongly recommended. Unfortunately it is in German, but all the same it is well worth perusal by anyone interested in the problems of failure of the circulation, so much to the fore at the present time.

CHOLECYSTOGRAPHY

The development of the dye test for defining the position and motility of the gall-bladder is an interesting example of applied physiology, and the knowledge so obtained of the working of the normal and pathological biliary passages is one of the striking advances of the last twenty years. It is fitting that our knowledge should be collated, and in the volume on "Radiology of the Gall-bladder,"[2] by Dr. NEMOURS-AUGUSTE, we have an admirable summary in French of present-day views. The author points out that the dye now used has a wide margin of safety, and much less than a severe toxic dose is needed to define the gall-bladder and neighbouring ducts. The dye apparently takes part with the bile salts in the circulation through portal system and intestine, so that it is reabsorbed from the intestine, carried to the liver, and again secreted into the hepatic duct. In the gall-bladder it is concentrated, and estimates can be made both of the motility and the concentrating power of the gall-bladder. In pathological states both phases of gall-bladder function may be affected, and indeed independently. In addition the opaque dye serves to show up readily inopaque grit and stones which otherwise could not be demonstrated with the *x* rays. Anatomical anomalies such as bilocular gall-bladder and tortuous ducts are common findings radiologically; many of these are probably due to abnormalities of the mucous membrane alone. A useful chapter is devoted to radiological technique; the preparation of the patient, the administration of the dye (whether intravenously or by mouth), and the best methods of obtaining clearly defined pictures are discussed in detail, and mention is made of the method of giving the dye in fractional doses so that further concentration may occur.

The author favours the intravenous route of administration, though recognizing certain disadvantages from the point of view of the patient. Of special value is the chapter on the diagnosis of chronic cholecystitis. The criteria necessary for this diagnosis are discussed under the headings of absence of shadow, poor intensity of the shadow especially after intravenous dosage, delay in appearance of the shadow (a sign not often met with), and poor elasticity of the gall-bladder walls, which can be studied by observing the concentrating power and intensity of shadow at intervals after dosage and by noting the evacuation after a fatty meal. If the function of concentration is interfered with the lesion is probably one of the mucous membrane. A gall-bladder that fills well but empties poorly has probably an affection of the wall. In this category is the "strawberry gall-bladder," which concentrates the dye well but evacuates it slowly; but, according to the author, the radiological differentiation between the strawberry gall-bladder and chronic cholecystitis is not possible. In a useful chapter the author sums up the reasons for disaccord between the clinical and the radiological diagnosis of gall-bladder disease, and he is especially interesting in dealing with series of published cases in which surgical and pathological studies have also been made. In this and throughout the work the author is eminently fair, and his book may be regarded as a good statement of present-day knowledge.

FIRST LINES IN MEDICAL ELECTRICITY

Medical Electricity for Massage Students,[3] by Dr. HUGH MORRIS, has been written, as its title implies, for students preparing for the examination in medical electricity of the Chartered Society of Massage and Medical Gymnastics. The author, being both lecturer and examiner in the subject, has an intimate knowledge of the kind of instruction most suited for the successful training of students, and he presents his teaching in a clear and practical form. This should prove a reliable textbook and a stand-by after qualification at times when reference to groundwork is necessary. It is essentially for its groundwork that Dr. Morris's book will be valuable, and mastery of it will ensure a strong foundation for all more advanced electrical work. He explains the nature of electricity simply, in terms of the electronic theory, and describes the methods of its production, instruments for its control, and standard units of measurement. The detailed information about the different types of medical electrical apparatus forms a most practical guide. The chronaxie method of testing muscle and nerve reactions is explained, but descriptions of treating various diseases are not given in detail. Students, however, usually learn the particular techniques in use at the hospitals where they undergo training. The inclusion of the Ministry of Health's memorandum on precautions against shock will impress

[1] *Das Beriberi-Herz. Morphologie, Klinik, Pathogenese.* By Professor Dr. K. F. Wenckebach. Berlin and Vienna: J. Springer. 1934. (Pp. 106; 38 figures. RM. 12; geb., RM. 13.50.)

[2] *Radiologie de la Vésicule Biliaire. Étude Anatomique, Fonctionnelle et Clinique.* By Nemours-Auguste. Paris: Masson et Cie. 1934. (Pp. 186; 102 figures, 27 plates. 45 fr.)

[3] *Medical Electricity for Massage Students.* By Hugh Morris, M.D., D.M.R.E. London: J. and A. Churchill Ltd. 1934. (Pp. 387; 103 figures. 15s.)

on students the need for unremitting vigilance during the treatment of patients. Other special features of the book are the appendices containing the syllabus for the Chartered Society's examination, the questions set during the last five years, an explanation regarding condensers, and a chapter of biographical notes on men whose work and discoveries have been responsible for progress in electrical science. The text is well printed and the diagrams clear.

THE SCHOOL CHILD

In the preface to his book entitled *The Road to Adolescence*[4] Dr. JOSEPH GARLAND, physician to the Children's Department of the Massachusetts General Hospital, says: "In an impressive and ever-increasing volume of literature on the various phases of infancy and childhood, the school child as an indivisible unit of mind and body appears to have been somewhat neglected." This neglect does not really seem very noticeable, but there is room for Dr. Garland's book. It is comprehensive, dealing with heredity, anatomy, hygiene, nutrition, the recognition and care of all the commoner illnesses and infectious diseases, the use of vaccines and sera, first aid, co-education, and some special educational problems, as well as child guidance in general, and all this in some 280 pages by no means crowded. The book is less superficial than might at first sight appear, for the author has the gift of saying in few words what has to be said, and of selecting from a very abundant material that which, for his purpose, is most worth while saying.

The parent who is fortified by the knowledge to be gathered from this book and who follows with some strictness the advice that it contains will certainly be able to avoid many errors and mistaken actions that are not uncommon, and he or she will have a better understanding both of the normal bodily and mental processes going on in the growing child and of any departures from normality. It is, of course, possible that the succinct and dogmatic character of statement which the scope of the book necessitates may engender in the reader, otherwise uninstructed, an undue confidence that may even sometimes be unfortunate; but the references to other works given at the end of most of the chapters are sufficient to indicate that there is more to be said. We think it a pity that Dr. Garland should begin by setting out the fortuitous and commonplace "Children's Charter" of the White House Conference, but this seems to have some mysterious attraction for American readers. The first chapter, too, called "Taking Account of Stock," may in some respects be held to be misleading.

DIFFERENTIAL DIAGNOSIS

Clarity in diagnosis is required before any effective therapeutic measures can be adopted. Not only must the practitioner form a judgement as to the nature of his patient's complaint, but he must be prepared to run his mind over other similar conditions and attempt to prove which of the possibilities is the most likely. Some textbooks give lists of diseases under the heading of leading symptoms, so that all the possibilities may be thought of. Other books work on the lines of the good clinical teacher who, using his clinical judgement roughly to classify the patient as suffering from a disease of one or other system, proceeds to investigate the symptoms and physical signs and then comes to a more or less definite conclusion as to the patient's ailment. This method is followed in MATTHES's "Textbook of Differential Diagnosis of Internal Diseases," the new seventh edition of which has been revised by Professor CURSCHMANN of Rostock.[5] The febrile conditions are first dealt with; the exanthemata and other skin rashes in infectious diseases being fully discussed, and the differential diagnosis of chronic rise of temperature. Diseases of the lungs and pleura occupy seventy pages.

The section on diseases of the heart and circulation is especially good. The method adopted is to discuss the diagnosis under the headings of the patient's complaints, the results of tests of function, and the objective findings. In this way, without repetition, the author succeeds in making a very readable exposition of the present position of cardiovascular medicine. A similar mode of attack enables the ground of diseases of the digestive organs to be adequately covered. Professor Curschmann holds the balance very fairly between the older views, founded upon von Leube's work on secretion anomalies as expressions of nervous dyspepsia, and the newer work, which relates these changes in secretion to forms of chronic gastritis. In regard to the so-called nervous dyspepsias, he says that the real question is not whether a disease is organic or only functional, but how far both sides enter into it. Thus the nervous dyspepsias occur in patients with psychological change; the implication being that both physical and psychological methods of treatment are needed. Sections on diseases of the blood, endocrine glands, joints, and bone follow. The book is up to date, and, having a full index, any subject may be found readily; its study will prove fruitful.

BENJAMIN RUSH

In a pleasantly written volume, *Benjamin Rush, Physician and Citizen*,[6] the life, character, and far-reaching activities of the outstanding figure in American medicine—the "American Sydenham"—have been described by Mr. NATHAN GOODMAN, who some four years ago, when engaged on a newspaper article on Rush, found out that his biography had never been written. This lacuna—and it must be admitted to be a serious omission—has now been amply and admirably filled. For authors without a medical training the task of describing the achievements of a physician or surgeon in any detail is not without pitfalls, which in the main have here been avoided; but a reference to "such distinguished Englishmen as Hunter, Cullen, Pott, and Guy" in the eighteenth century might suggest that the founder of the famous hospital near London Bridge was a medical worthy. Rush came of an Oxfordshire Puritan stock, and travelled across the Atlantic from Philadelphia to sit at the feet of Cullen at Edinburgh, where he took his M.D. in 1768 with a thesis on gastric digestion; this was based on experimental vomiting induced by tartar emetic after meals of varying composition, and showed that "acetetous" fermentation went on in his stomach. Then turning south he spent some time in London, where he met Goldsmith, Samuel Johnson, the painters Sir Joshua Reynolds and Benjamin West, and the medical magnets Sir John Pringle and John Fothergill, the last well known in the "city of brotherly love." Then to Paris, but only for a short time, as he found "medical science but little developed."

[4] *The Road to Adolescence*. By Joseph Garland, M.D. Cambridge, Mass.: Harvard University Press. London: H. Milford, Oxford University Press. 1934. (Pp. 293. 16s. 6d. net.)

[5] *Lehrbuch der Differentialdiagnose innerer Krankheiten*. By Professor Dr. M. Matthes. Revised by Professor Dr. Hans Curschmann. Seventh edition. Berlin: Julius Springer. 1934. (Pp. 804; 126 figures. RM. 28; geb., RM. 30.)

[6] *Benjamin Rush: Physician and Citizen (1746–1813)*. By Nathan G. Goodman. Philadelphia: University of Philadelphia Press; London: H. Milford, Oxford University Press. 1934. (Pp. vi + 421; 8 figures. 17s. net.)

Returning to Philadelphia to practise, he is described as a handsome, dignified, seriously minded young man not blessed with any sense of humour, who had become imbued with republican ideas when in Edinburgh. Philadelphia was then the clearing-house for anti-British feeling, and he became a leader among the rebels, though later he quarrelled with Washington. Originally a devoted follower of Sydenham and the humoral school, he adopted Cullen's solidist conception, and later the Brunonian method of treatment, but remained a vigorous advocate of bleeding. During the quarter of a century after the War of Independence he was a most influential teacher and popular lecturer. In 1803 he described oral sepsis as the cause of various diseases; before this he had advocated inoculation against small-pox, and at once recognized the future of Jennerian vaccination. He wrote a wise treatise on old age, and is described as "the first American psychiatrist."

Notes on Books

During the four years which have elapsed since the publication of *Diathermy in General Practice*[7] the author, Dr. PAYTEN DARK, has had more extensive experience in the medical and surgical uses of diathermy, and has had the agreeable experience of finding his beliefs in its efficacy strengthened and confirmed. In the second edition he has added considerably to the most interesting part of the book—namely, the records of cases treated. All the cases of high blood pressure which the author has had under his care, and all those of sciatica, are included, and there is a special chapter on failures. Naturally, in short series of cases it is difficult to assess the actual part played by diathermy in any improvement that occurs, but where there is relief from pain this is distinctly noticeable. A chapter on diathermy in gynaecology has been contributed by a gynaecological surgeon, and one, on diathermy in the treatment of mental disorders, by the superintendent of the mental hospital at Parramatta, New South Wales. Dr. Dark writes with enthusiasm, and is to be commended for his enterprise in giving treatment by diathermy to patients many of whom had had no relief from any other measures. He has perhaps an exaggerated idea of the ease with which diathermy can be applied, for he says: "Anyone not worse than a half-wit can grasp the general principles from an hour's demonstration. The risks are practically *nil*." His book should arouse interest among his fellow practitioners in Australia. In this country the general practitioner anxious for information about diathermy has already a good choice of books in which to seek it.

In *Fit or Unfit for Marriage*[8] Dr. TH. H. VAN DE VELDE, the author of several well-known books on the physiology and psychology of coitus and allied topics, states that this, though primarily addressed to the lay public, is secondarily intended for the medical profession, and particularly for family doctors when called upon to give advice on marriage questions. The book is divided into three sections, according as the problem is discussed from the biological, psychological, or social standpoint.

The second volume[9] of "Biological Data for the Paediatrician," jointly the work of the editor, Professor J. BROCK and Professors E. THOMAS and A. PEIPER, deals with the respiratory apparatus, urinary system, the endocrine glands, nervous system, and metabolism of children. The third and concluding volume, promised for 1936, is to continue the account of metabolism in its special features. As a work of reference this book is a most useful store of information on the facts of physiology, anatomy, biochemistry, and biophysics as applied to the special problems of childhood. The bibliographies at the end of each section appear to offer a wide field for workers seeking more detailed knowledge.

[7] *Diathermy in General Practice*. By Eric Payten Dark, *M.C.*, M.B., Ch.M. Second edition. Sydney, Australia: Angus and Robertson, Ltd.; London: Australian Book Company. 1934. (Pp. 213; illustrated. 17s. 6d. net.)

[8] *Fit or Unfit for Marriage*. By Th. H. van de Velde, M.D. London: Chapman and Hall, Ltd. 1934. (Pp. xii + 362. 10s. 6d. net.)

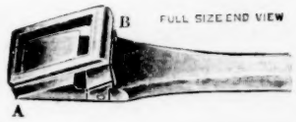
[9] *Biologische Daten für den Kinderarzt*. Band II. By Professor Joachim Brock, Professor Erwin Thomas, and Professor Albrecht Peiper. Berlin: J. Springer. 1934. (Pp. 321; 38 figures. RM. 26; geb., RM. 27.20.)

New Preparations and Appliances

A SUBCUTANEOUS FASCIOTOME

Dr. H. A. D. SMALL (Queen Mary's Hospital for the East End) writes:

Providing that one admits Gallie's findings in regard to fascial healing, there is no argument for the open removal of fascia lata from the thigh with the accompanying ugly incision, other than the frequent inadequacy of the instrument available for its subcutaneous removal. The instrument illustrated here can, with the greatest simplicity, remove a strip of fascia lata as regular as a piece of tape, and from ten to eleven inches in length through an incision two to two and a half inches long at the lower end of the thigh and a tenotomy puncture at the upper end. The principle can best be understood by reference to the instrument.



A vertical incision two to two and a half inches in length is made over the anterior edge of the iliotibial band—its lower end being at the level of the upper border of the patella. A tongue of fascia is freed from the underlying tissues and turned upwards. It is about 0.4 inch in width. The free end of this is fed through the slot A and the aperture B (see figure), and is then firmly grasped by a pair of Kocher's forceps. The left hand keeps a gentle traction on this, while the right pushes the instrument upwards. The upper surface pushes up the subcutaneous tissues, while the lower pushes away the underlying tissues, one being above and the other below the fascial layer, while the two vertical blades cut a strip from the fascia. When resistance is met with by the head striking the adherent fibres of tensor fasciae femoris (from ten to eleven inches up) the strip is freed at the top by a subcutaneous tenotome—or by a tiny incision if the patient is very fat—and the strip is drawn down.

The description may seem rather complicated, but actually the operation is simplicity itself. Points in technique are: (1) The vertical rather than the transverse incision: this allows the tongue to be more easily and accurately cut. (2) To keep close to the anterior margin of the ilio-tibial band, as here the fibres are practically parallel, and also the longest possible distance intervenes before the adherent muscle is reached: the track of the instrument should point to the anterior superior spine or just behind it. (3) To keep the instrument nearly parallel to the surface of the limb and continue to cut with even pressure: withdrawing partially and then plunging forward should be avoided.

The width of strip can be varied within limits on the same instrument. I have chosen 0.4 inch as giving two 0.2 inch strips—enough for most purposes. I have now used the instrument, first in the cadaver and then in the living, with perfect success.

The makers are Down Bros. Ltd., London, S.E.

British Medical Journal

SATURDAY, FEBRUARY 9th, 1935

SURGERY OF THE GALL-BLADDER

In an attempt to discover the factors affecting operation mortality, Heuer[1] has recently analysed the huge total of over 36,000 results of operation on the gall-bladder in the world literature, in addition to 1,000 cases taken from the records of the New York Hospital. Mortality figures relative to such numbers must nearly approach the mathematical average, and are worth quoting in full. The general mortality was 6.6 per cent. Post-operative peritonitis, shock, and haemorrhage taken together caused 33 per cent. of all deaths; post-operative pulmonary complications, 20 per cent.; gangrene and perforation, 10 per cent.; cardio-renal complications, 12 per cent.; hepatic failure, 4 per cent.; pancreatitis, 2 per cent.; and undetermined causes, 19 per cent. These figures closely correspond with those of the New York Hospital series. The author makes suggestions for reducing the incidence of the different complications, but his observations on acute cholecystitis are of most interest. He finds that at least 20 per cent. of the acute cases go on to gangrene and perforation when a waiting policy is adopted, and that this complication carries an average operative mortality of 46 per cent., or 10 per cent. of all post-operative deaths. Heuer concludes from his survey that this death rate could be greatly reduced by early operation, and that the difficulties and dangers of operation at this stage of the disease have been overestimated. According to H. F. Graham and Waters[2] an increasing number of leading American surgeons are operating on the early acute cases. As a result of their personal experiences and study of recent literature they consider that these patients should be operated on "as promptly as is consistent with safety. This usually means within a few hours." Among English surgeons they quote Walton: "Since it is impossible to determine whether the inflammatory changes will progress or resolve, an operation should always be advocated in the early stages. If carried out within the first twenty-four hours it will be as free from danger as the corresponding one performed for acute appendicitis."

In a very careful and detailed analysis Touroff[3] has shown that in a minority of "subsided" cases of acute cholecystitis advanced pathological changes varying from simple acute inflammation to empyema and gangrene may be present in the gall-bladder with absence of, or slight, clinical manifestations, although in the majority the signs and symptoms are proportionate to the severity of the lesion. Among 429 operation case records which he examined, seventy-five belonged to the former category. Of these, 20 per cent. were considered to have progressive lesions, while 80 per cent. were resolving or capable of resolution. Delay in operation therefore involves a risk of perforation which cannot always be foreseen. Eliason and McLaughlin[4] have studied the subject with special reference to the incidence and results of perforation. In a review of over 7,000 cases from the literature they found this complication reported in from 1 to 3 per cent. of all cases of gall-bladder disease, with a mortality varying between 10 and 58 per cent. In their own series of 490 cases there were nine perforations with only one death: none of the perforations was free into the peritoneal cavity. These writers advocate early operation in all cases of acute cholecystitis which do not subside quickly under palliative treatment. Behrend[5] is definitely opposed to treating these cases as surgical emergencies, to be operated on in the acute phase; such a policy, he believes, would result in a general increase of mortality owing to the great technical difficulties which may be encountered and the necessity for secondary operations. Strict lines of delayed treatment are, however, essential—complete abstinence from food and drink, morphine to relieve pain, and plenty of glucose solution by the intravenous and hypodermic routes. Operation is undertaken when the acute symptoms subside. Under this regime Behrend considers that all cases of acute cholecystitis do subside, and that perforation need never be feared. His review of 1,053 operation results in the literature shows a mortality of 9.3 per cent. in the acute cases and 5.3 per cent. in the subsided ones. He does not publish his own figures.

These discussions are of great interest in revealing the variety of surgical thought on a common and an important disease, but they illustrate once more the fallacy of trying to establish general principles of treatment from published operation results, however large their numbers or eminent their authors. A good operation in the hands of one surgeon is not necessarily so in the hands of another, nor can it be recommended for general adoption. English surgeons, in the main, have been conservative in their treatment of the acute gall-bladder, an attitude chiefly determined by the comparative rarity of perforation and the difficulties and dangers of cholecystectomy at this stage. No new facts have emerged from the above discussion which would appear to justify any modification of this view.

[1] *Ann. of Surg.*, 1934, xcix, 881.
[2] Ibid., 1934, xcix, 893.
[3] Ibid., 1934, xcix, 900.
[4] *Ann. of Surg.*, 1934, xcix, 914.
[5] Ibid., 1934, xcix, 925.

INDUSTRIAL PSYCHOLOGY

An anxious situation confronts the National Institute of Industrial Psychology, now thirteen years old. It has hitherto enjoyed very large donations from the Rockefeller and Carnegie Trusts and from a few other generous donors; but obviously these benefactors cannot be expected to finance the work for ever, and a wide appeal to the general public is now imperative if the Institute's labours are not to cease. Much of the work carried out is done for business firms who pay,

and this department can, of course, continue ; but improvement in the methods employed and in the results obtained must demand research for which there is no corresponding remuneration. For this aspect of its valuable services to the country the Institute asks the support of the general public. A tremendous task lies ahead in a field which has been almost untilled save by the Institute itself. Beginning with vocational guidance, it conducted an experiment in conjunction with the Industrial Fatigue Research Board on a hundred boys and girls in three London elementary schools. The results were most encouraging, and considerable progress has since been made. A follow-up of the young people who were vocationally guided during the years 1927 to 1929 shows a proportion of correct predictions of nearly 80 per cent., and the chances of success among those who followed the advice of the Institute were 11 to 1 in favour. A further experiment was made in 1929 on Borstal boys, and it was found that 69.5 per cent. of those who had been placed in the work parties recommended for them had become Grade A workers. This figure compares well with that of 45.6 per cent. Grade A workers among those placed according to the recommendations of the house master.

From the work on vocational guidance there developed a series of inquiries into general and special abilities and their nature and estimation. A search was made for a test of general intelligence which could be applied simultaneously to a large number of persons, and the now well-known "Group test—Series 33" was prepared and published. It consists of several groups of tests which essentially involve the use of what is generally called intelligence. The test was originally devised for secondary school children and adults, and a second group ("Group test—Series 34") was constructed for younger pupils. It has proved to be of great value in the guidance of those who leave school at 14 and in estimating the intelligence of those at a still earlier age. A further modification was made for the War Office, and more radical changes have been made by Scotland Yard in using the test for the selection of police officers. More research is needed, however, on certain performance tests, and on other factors which seem necessary for success in school work in England and for shop work. Other researches have inquired into the nature of manual dexterity and tests for mechanical aptitude—that is, the ability to apprehend and employ the mechanical principles concerned in the use of machines and implements. In 1928 the Institute embarked on a long investigation into the abilities involved both in assembling operations and in similar manual operations of various kinds. Manual skill was found to have a very complex character, the order of skill at any one operation not necessarily coinciding with the order at other operations. Nevertheless, four factors have been clearly established: a general factor identified with intelligence, a common factor of mechanical aptitude, a common factor of manual dexterity, and specific factors peculiar to each manual operation. The general factor was determined by correlating the scores for general intelligence, and the mechanical factor by correlating the scores with that for mechanical aptitude in situations where no manual activity was called for. Prolonged practice in one operation was found to have little or no influence on the skill with which other operations were performed later. When instruction in the basic principles governing one assembly operation was substituted for merely routine repetition of that operation, there was very considerable transfer of skill to other manœuvres and a greater speed of acquisition of such skill. These results clearly have a direct practical application to industry. New workers should not be allowed to pick up their methods by haphazard practice, but should be systematically trained in general principles.

The Institute has distinguished three different kinds of general intelligence—verbal, practical, and social—according to whether the person has to deal with abstract thought, concrete objects, or living individuals. Another fruitful research was the use of certain tests of perseveration—that is, the degree of resistance to changing from one conscious process to another. It appears that many temperamental qualities and character traits are associated with the different degrees of perseveration. An investigation of great importance at the present time is that concerned with the selection of motor drivers. It has resulted in a series of tests for speed and accuracy of response ; resistance to distraction ; distribution of attention ; vision ; judgement of speed, size, and distance ; confidence ; and road behaviour. The tests not only pick out the safest drivers and those most suitable for training others, but they also indicate those faults in a poor driver which may be improved by training. Another interesting research was that on the difference between people who can attend to many things at once and people who cannot give their whole attention to more than one thing at a time. The results indicated that the nature of attention is less important fundamentally than the intensity and the speed at which successive acts of attention are demanded. Another branch of the work is a study of the conditions and requirements of various occupations, on which vocational guidance and selection depend quite as much as on a knowledge of the aptitudes of the worker. Recently three extensive pieces of research have been conducted into the occupations of women secretaries, women nurses, and women secondary school teachers. Among the many other problems which the Institute has faced are the best type of miner's lamp ; the assembly of wireless sets ; the value of incentives to work ; working conditions in agriculture, in domestic work, and among the blind ; and the influence of short time on speed of production. So great is the value of the research, not only to the individual, but also to the corporation and the State, that we can scarcely believe the public will fail to provide the financial support which is necessary if the research work of the Institute is not to stop in two years' time.

TRACHOMA IN THE BRITISH EMPIRE

There is an international organization against trachoma. At its meeting in Paris last May Mr. A. F. MacCallan, who has had such exceptional experience of the treatment of this disease in Egypt, read a paper giving an account of the extent to which it affects the people of the British Colonial Empire.[1] Canada, like the United States, has rigorous regulations for the entry of emigrants. The instructions for examination of the eyes by the emigration medical officers are given in the paper. They could not be bettered. There are a few unimportant foci of trachoma in the country among Hebrews and Eastern European immigrants. In Indians, whose numbers show a 10 per cent. increase in the last ten years, there is an approximate incidence of 10 per cent. The incidence of the disease among the white population of Manitoba and Saskatchewan is reported by Gordon Byers to be serious. In Australia trachoma is prevalent in certain parts. Cases were found among the troops during the war. It is spoken of rather lightly as "sandy blight," and within the coastal areas it is now practically extinct. It is noted that records show that in each State trachoma has been frequent during early settlement, when housing and living conditions were primitive and diet often poor in quality and irregular in supply. In infected areas special arrangements are made for periodic school inspections and treatments. Trachoma is a notifiable disease both in New Zealand and in South Africa. The returns show that cases are few. In India the most important work has been through the controlled enlistment of trachomatous recruits into the Indian Army. This has developed into an investigation of the nature and extent of the disease as met with in Northern India. The disease is widespread among certain classes, particularly Sikhs, among whom well over 90 per cent. are infected. In other parts of the country the incidence is much less. Some have asserted that many of these cases are not trachoma at all, but forms of chronic conjunctivitis; it is not possible to be dogmatic, for only experience can enable one to diagnose between early cases of trachoma, angular conjunctivitis, and follicular conjunctivitis. Palestine has the unenviable distinction of having a greater percentage of blind persons among her general population than any other country in the world. The number of blind persons per 100,000 of population is 843. Egypt comes next with 776. The average for European countries is about sixty. In Palestine the highest incidence is in the south, and is related to the scarcity of water. The incidence is high up to the age of 10 to 15 years, then it falls for boys, but remains high for girls up to 30 years of age, for since they remain in contact with the children they are the more subject to infection. Mr. MacCallan considers that uncomplicated trachoma is not a cause of blindness, but that trachoma complicated by superadded bacterial infections is a cause of blindness, the corneal disintegrating factor being mainly the bacterial infection. He holds the view that in ancient days Palestine was a well-wooded country, with an abundant rainfall. Since there was no fuel except trees a grand deforestation resulted, with a consequent diminution of rainfall. With an insufficient water supply trachoma and acute ophthalmias ran rife. On the prevention of the disease, he writes, no universal scheme of prophylaxis for all countries can be recommended. Each country may require a different method. But at least it can be said that the one method which can and should be applied to all countries is treatment in the schools; and before any school measures can be successfully attempted it is important to have in being a hospital or clinic where parents can themselves experience the benefit of treatment.

[1] Trachoma in the British Colonial Empire. Its Relation to Blindness; the Existing Means of Relief; Means of Prophylaxis. By A. F. MacCallan. Reprinted from the *British Journal of Ophthalmology*. London: George Pulman and Sons Ltd. 1934.

GRAPHIC RECORD OF THE HEART

There has hitherto been little practical success in attempts to register heart movements graphically. Dr. Russell Reynolds has recently announced his achievement in recording the movements cinematographically. An alternative method is kymography, on which Dr. Pleikart Stumpf and Professor I. S. Hirsch of New York contribute papers in a recent issue of the *British Journal of Radiology*.[1] Essentially the method is radiography through a slit diaphragm placed close to the object, the record being taken on a moving film. Interposed between the thorax and the recording film is a sheet of impermeable metal in which are regularly spaced narrow slits. The outward diastolic and inward systolic movement of the small portions of the heart's outline disclosed in the slit are recorded on the film—which moves at right-angles to the direction of the slits—in the form of a wave, of which the peak indicates the position of that particular part of the heart in diastole, while the trough represents systole. The points of the heart's surface studied are thus limited in number, and it is important that the slits should be close enough, because points which lie quite close to each other may show different movement. Dr. Stumpf has devised a method which utilizes the largest possible number of points on the heart simultaneously, thus improving on earlier techniques, where only marginal points were studied. He employs a series of slits so close together that the shape of the organ can be recognized by looking through them. Slits spaced 12 mm. apart have proved practicable, and with them the varying shape of the heart is reproduced and a series of changing contours shown on the screen. The change in density of the heart during its beat is seen as transverse bands, the better illuminated representing systole and the less illuminated diastole. As an example of the value of kymography in clinical work Dr. Stumpf illustrates a case of metastasis from a malignant thyroid. Fluoroscopy revealed a shadow opposite the pulmonary vessels which could never be clearly defined, and might well have been a dilatation of the vessel. The kymogram showed waves at the edge of this abnormal shadow which represented neither the usual picture of the aorta nor the curve of the auricle. It was possible to exclude the heart vessels altogether and make certain the diagnosis of a small tumour attached to them. The kymogram thus permits determination of the extent, duration, and relation of movement of various parts of the heart and the topographic differentiation of the various structures which make up the median shadow. The action of drugs on the heart

[1] 1934, vii, 707.

can be studied, using as criteria the difference in the frequency and amplitude of the wave and the changes in the movement of the pulmonary vessels before and after administration. The distortion of the outline of the lower left part of the heart and left apex by a pleural exudate can be differentiated from that due to pericardial effusion, because the kymographic waves are unaltered in the former case. In pericardial effusion the waves are remarkably diminished and ill defined over the ventricular portion and absent over the auricular portion of the shadow. In hypertrophy of the heart the waves may be diminished over the apex but are characteristic over the upper part of the ventricle. These are only examples of the possibilities opened up by this method of investigation. There are indications that the field of usefulness will be wide, and that many difficult problems of cardiodynamics may be solved by its means.

H. O. THOMAS

The peculiar position which Hugh Owen Thomas holds amongst the modern leaders of British surgery is well brought out by Mr. Frederick Watson.[1] Lister, Syme, Macewen, Horsley, Paget, Hilton, Treves, and Watson Cheyne occupied positions in great hospitals and chairs in recognized schools or universities ; all were men of education who were held in high esteem by their professional brethren. "H. O." never held any academic post ; he laboured, thought, and invented among patients drawn from the docklands of Liverpool ; he spoke to the medical world of his day by books and papers which breathed a polemical spirit. He was at war with religion. He is the Ishmaelite amongst our great leaders. "Curiously enough," writes his biographer, "Thomas had expressed the hope that he would not be remembered as inventor of splints." And yet we fear that he is best known to-day by the "Thomas" splint. This misconception of what medicine owes to the Liverpool surgeon will be remedied soon when a companion volume, *The Principles of Practice of Hugh Owen Thomas*, by D. McCrae Aitken, is published. The biography by Mr. Watson, who as the son-in-law and biographer of Sir Robert Jones has had at his disposal all letters and papers relating to the Thomas family, leaves a vivid impression of the strange personality of the great orthopaedic surgeon. Were a writer of modern fiction to search our medical gallery for a character study the choice would almost certainly fall on Hugh Owen Thomas. Much of his attitude towards his fellows was determined by the circumstances of his birth and education. His father, Evan Thomas, set up as a bone-setter in Liverpool ; he came of a long line of men who had practised that art in Anglesea. His father was evangelical, almost calvinistic, in his religious opinions ; he was also at enmity with orthodox practitioners. To be brought up under such circumstances, and to study medicine in Edinburgh and in London on limited means and with no desire for the games and social side of student life, gave a feeling that mankind was antagonistic to him. "Manipulative" and other unqualified practitioners who wish to overcome the obstacle which registration places in their way may study with advantage this life of Hugh Owen Thomas. Evan Thomas the bone-setter had five sons—the eldest being H. O. When the father saw that the opposition which the medical profession offered to his art kept growing in strength, he sent all of his sons to acquire an orthodox training and diploma, and taught them, too, what he himself had learned. Probably H. O. Thomas was more indebted to his father, Evan Thomas the bone-setter, than he cared to acknowledge.

[1] *Hugh Owen Thomas. A Personal Study.* By Frederick Watson. London: H. Milford, Oxford University Press. (12s. 6d. net.)

NEW YORK A HEALTHY CITY

The health record for 1934 of the city of New York is remarkably good. In spite of the grave economic depression of the last five years, the general death rate was only 10.15 per 1,000 of population, the lowest ever attained there. The tuberculosis mortality continues to fall. During the year the city's health department organization was strengthened, improved *x*-ray equipment installed in the clinics, facilities for pneumothorax treatment extended, and a more complete follow-up system of tuberculous cases inaugurated. The work is now under the direct supervision of a full-time specialist. The pneumonia death rate was also the lowest on record, partly attributable to the low prevalence of measles and the absence of any outbreak of epidemic influenza. Good progress has been made with the specific serum treatment of pneumonia. Measles causes far more deaths in New York than does diphtheria, usually from a supervening pneumonia in children. In common with a number of other large cities in the United States, New York had a more severe type of diphtheria in 1934 than in other recent years ; with fewer reported cases, there was an increased mortality. This indicates the need for securing the immunization of children as soon as they reach the age of 6 months. With the toxoid now employed a single injection usually suffices. A table has been issued by the public health authority showing how this prophylactic measure, introduced by a campaign in 1929, has lowered the annual number of deaths from about 700 to 100, and an incidence of 11.24 per 100,000 of population to 1.38. The number of cases reported in 1934 was the lowest on record. The whooping-cough mortality figure last year was well below that of recent years, and infantile poliomyelitis has not been markedly prevalent since 1931, though there was a slight rise in incidence in 1933. A protective vaccine has recently been prepared by Dr. Maurice Brodie in the health department's research laboratory ; its administration in children has been found to be safe, and in monkeys it has proved to have high immunizing value. Control measures against typhoid fever have continued to reduce mortality, while the number of cases due to bathing in prohibited sewage-polluted waters and to shellfish taken from them was much less in 1934. Despite all the talk about the effect on health of the pace of modern civilization, no evidence has been found that diseases of the heart, the arteries, and the kidneys, including apoplexy, cause more deaths among older persons than they did a generation ago. Similarly, careful study of the cancer figures has not shown that the disease is, on the whole,

more prevalent in any one age group. It is probable that there are at least 25,000 cases of diabetes in the city, and there may be nearer 100,000. The disease affects women more than men, and is more prevalent among Jews. The rising number of deaths from diabetes is attributed to the advancing age of the population, and to better recognition of the disease, but there is reason to believe that the death rate is actually decreasing. In view of the continued high death rate of appendicitis, the Academy of Medicine has appointed a committee of investigation. Deaths from motor car accidents have fallen since 1929, thanks largely to the better control of street traffic and to a decrease in the number of cars used during the depression. Among children, malnutrition rose to a peak in 1932, since when there has been a steady decline, an indication of more effective health administration. The infantile mortality rate was lower in 1934 than in 1933, but not so low as in 1932. There has been no improvement in the maternal mortality rate, and the birth rate is declining.

KIDNEY FUNCTION IN PREGNANCY

Although it is a well-known fact that women suffering from the albuminuria of pregnancy usually secrete a diminished quantity of urine, little evidence on this subject is available. McManus, Riley, and Janney[1] have carried out water diuresis tests both on normal pregnant women and on those suffering from the toxaemias of pregnancy. The patients drank 1,200 c.cm. of water in six equal doses at half-hourly intervals. Eight specimens of urine were collected in the four-hour period commencing when the first dose of water was taken. The results indicated that normal pregnant women during the last four weeks of pregnancy excrete some 46 per cent. less urine than the non-pregnant women used as controls, but nevertheless in amounts considerably in excess of those passed by toxaemic patients. These patients were divided into three groups: (*a*) low reserve kidney and chronic nephritis; (*b*) pre-eclampsia; (*c*) eclampsia. Their responses to the ingestion of water were in that order, the eclamptic patients excreting only 169 out of the 1,200 c.cm. in the stated period. On the other hand, tests carried out on the same women two weeks after delivery demonstrated that the kidneys of the eclamptic women made an almost normal response to the ingestion of water, whereas those of the pre-eclamptic patients gave the least satisfactory response. The authors consider that these results suggest that diuresis in the nephritic group is inhibited by "some intrarenal, semi-permanant (or permanent), organic damage, while in the eclamptic group the causative factor is extrarenal"—an opinion which is based on the rapidity and extent of the recovery in the first two weeks of the puerperium. They are further led to challenge the current belief that pre-eclampsia is "the same as eclampsia in character but of less severity" because their curves do not support this supposition. It is clear that a larger number of cases will have to be investigated before these conclusions can be other than suggestive, but there can be little doubt that the water diuresis test is one of great value.

[1] *Amer. Journ. Obstet. and Gynecol.*, 1934, xxviii, 524.

APPLIED SCIENCE

The ever-widening range of the applications of science to the problems of daily life is indicated in the annual report of the Department of Scientific and Industrial Research.[1] The introductory paragraphs pay tribute to the work of the late Sir William Hardy, who has been succeeded as Director of Food Investigation by Mr. E. Barnard. "Hardy would have asked for no better memorial than the imperial team-work which owed so much to his experience, enthusiasm, and ideals." It is now nearly ten years since the assistance of the Department was sought by the Minister of Health of that day in handling urgent technical problems arising in connexion with housing schemes. Since then the building research station has grown apace and has developed close contacts with a comprehensive range of industries concerned with the building trades. Increased activities in this branch of technical study are now foreshadowed as a result of the Government's rehousing programme. Among the matters summarized in the 180 pages of this report, those of most medical interest relate to food of many kinds, to water pollution and sewage disposal, to the improvement of industrial respirators, and to the measurement of glare. A potent arsenical drug, succinanilidomethylamide-*p*-arsonic acid, has been prepared in quantity and is now being tested clinically. Investigation of dental alloys and amalgams, and of a non-metallic substitute for dental vulcanite, has been carried out at the National Physical Laboratory. Regret is expressed that, apart from one piece of research nearly completed, the Dental Board, owing to the calls upon its available funds, cannot continue to finance the investigations of dental materials which have been in progress for many years at its expense under the supervision of the Department's dental investigation committee. Other subjects of everyday interest that catch the eye are the protection of clothing from moth and mildew, fireproof construction of flats, and measurement of the flow of air through shoe leather.

CHADWICK MEDAL AND PRIZE

The Chadwick gold medal and prize of £100 has been awarded to Colonel W. P. MacArthur, who is now Deputy Director-General Army Medical Services at the War Office, and was formerly consulting physician to the British Army. Under the trust scheme this award may be made once in five years to the medical officer of the Navy, Army, or Air Force who has most distinguished himself during that period in promoting the health of the men of the Service to which he belongs. The presentation of the medal and prize to Colonel MacArthur will be made by Sir William Collins at Manson House, Portland Place, W.1, on Monday, February 18th, at 5 p.m.

The Colonial Office announced on February 3rd that a telegram from the Governor of Ceylon reported that the malaria situation there continues to improve steadily. A further sum of £37,500 has been voted for relief measures to be organized under a special commissioner.

[1] Cmd. 4787. H.M. Stationery Office. 1935. (3s.)

TREATMENT IN GENERAL PRACTICE

This article is one of a series on the management of some of the major medical disorders met with in general practice

CHRONIC BRONCHITIS AND EMPHYSEMA

BY

R. A. YOUNG, C.B.E., M.D., F.R.C.P.

A conjoined diagnosis of chronic bronchitis and emphysema is very frequently made in middle-aged and elderly patients suffering from chronic or recurrent winter cough. These associated conditions are, without doubt, common in this country, but this diagnosis should not be accepted without full investigation, since emphysema tends to conceal or to mask other pulmonary lesions, while bronchial signs are common as a feature of conditions as various as tuberculosis, fibrosis of the lungs, bronchiectasis, asthma, nasal sinus infections, cardiac failure, and some of the rarer pulmonary or bronchial infections. Careful examination of the sputum should therefore be carried out in every case, and tuberculosis should always be suspected when the cough persists into the summer months. Radiological examination is also desirable, with the use of lipiodol in some cases, to exclude bronchiectasis, unsuspected tuberculosis, and fibroid conditions consequent on catarrhal or pneumonic attacks earlier in life. Senile tuberculosis, masquerading as chronic bronchitis and unrecognized, is without doubt a serious factor in the spread of tuberculous disease.

Preventive Methods

Chronic bronchitis and emphysema in association constitute one of the best examples of the vicious circle in disease, and it is therefore important to treat any cause of chronic cough effectively as soon as possible, since by the time any severe degree of emphysema develops the most that can be hoped for is the arrest of the process. Examination of the heart, urinary tests, and thorough investigation of the nasal sinuses and the pharynx may reveal abnormalities conducing to cough or favouring bronchial infections. Careful inquiry into the occupation and the habits may give useful indications. Work in dusty, damp, or draughty conditions is to be avoided or modified. Over-smoking may be a notable factor in inducing chronic cough and leading to chronic bronchitis, while overfeeding and alcoholic excess may promote the incidence of catarrhal infections. Special caution is necessary in patients of obese habit and in those with high blood pressure or chronic renal disease.

Vaccines, either autogenous or stock, seem to have a useful prophylactic role, especially in the middle-aged and elderly, but special care should be exercised in the dosage in patients with asthmatic tendencies, as they are often hypersensitive to them. In those who are subject to recurrent bronchial attacks in the winter months it is useful to repeat the ultimate dose found to be effective about once every five or six weeks during the winter and early spring. Oily and liquid paraffin solutions or suspensions of antiseptics and astringents, such as adrenaline, adrephine, or ephedrine, or special preparations like metaphedrin or ephregel, may be useful in cases in which the recurrent infections seem to commence in the nose or pharynx

Those with chronic bronchitic tendencies should avoid close, overheated, and stuffy rooms, places of entertainment, and railway journeys, especially when influenza or catarrhal infections are rife. Older patients are well advised to remain indoors in the evening and in windy and inclement weather. This may involve long periods within doors, but whenever possible they should go out for walks, and when they are confined indoors the rooms should be well ventilated and not overheated. A fire in the bedroom at night, banked at bedtime with briquettes or with moistened slack in paper bags, to keep an even temperature of 60° to 65° F., is a valuable precaution, particularly for elderly or aged patients. In foggy or damp weather a frame covered with book muslin may be fitted into a partially opened window to allow ventilation and keep out the soot and damp. Younger patients with catarrhal tendencies may find it helpful to take their holiday in the winter and go to the South Coast or for a cruise to warmer latitudes. Patients with catarrhal or bronchitic tendencies should avoid living on clay soil, in damp river valleys, or in marshy districts. High altitudes are generally unsuitable for those with marked emphysema, owing to the rarefaction of the air and the reduced oxygen tension, which tend to produce dyspnoea and distress.

Occupation is often a matter of great importance. Dusty trades, work in overheated rooms, or outdoor occupations involving frequent exposure may be dangerous to those with bronchitic or catarrhal tendencies, and the practitioner may have to advise a change of occupation or the necessity for an alteration in the conditions of work.

Treatment

The manifestations of chronic bronchitis are varied, and since the time of Laennec attempts have been made to separate various types chiefly on the basis of differences in the character of the expectoration—such as dry catarrh, bronchorrhoea serosa, chronic suppurative bronchitis, and chronic fibrinous bronchitis. In the main, however, the symptoms are those of cough, expectoration, dyspnoea of increasing severity, cyanosis, and more or less disturbance of sleep. The indications for treatment are therefore practically the same in all varieties.

General Management

The general ordering of the patient's mode of life is of great importance, and is most often a matter for compromise, since financial, economic, and family circumstances may render the ideal unattainable. In elderly bronchitics living in unfavourable conditions such as those mentioned above, a change to a more suitable climate and surroundings should be advised—for example, to some of the South Coast resorts, including those of the Isle of Wight and the Channel Islands, especially those with shelter from winds and with a more liberal allowance of sunshine. The North Coast of Wales, and even some of the East Coast resorts, may be suitable for patients of more robust constitution, who prefer bracing situations. Wintering abroad is possible as a rule only for those in comfortable circumstances. The French and Italian Riviera resorts and the Mediterranean islands have long enjoyed a reputation in this regard, but patients going there should be warned of the risks of being out of doors after sundown, owing to the sudden cooling of the air and the cold winds from the mountains. They should also bear in mind the opportunities for fresh infection

from the overheated hotels and places of entertainment, and even from the trains. The Atlantic islands—Madeira, Grand Canary, Teneriffe, and the Azores—all enjoy an equable climate and a liberal allowance of sunshine, but they are, for various reasons, less popular than in times before the war. A voyage to the West Indies or to the Cape has many attractions, and a stay in these parts may enable the patient to escape the English winter and so avoid catarrhal attacks altogether, a very desirable object in cases of advancing emphysema. Egypt, North Africa, Florida, and California are all suitable places. In most instances, however, the patient cannot afford to carry out such recommendations, and the practitioner has to content himself with advising the patient to stay indoors in foggy, damp, and windy weather, to avoid unfavourable conditions as far as possible, and to carry out every possible precaution against chill, exposure, and infection.

Whenever any acute attack or any exacerbation of the bronchitis occurs the patient should be treated as for acute bronchitis. On the other hand, chronic bronchitics without fever need not be kept indoors when the weather is favourable: indeed, it is advantageous for them to go out for gentle exercise, thereby promoting evacuation of the bronchial exudate and improving the pulmonary circulation.

What to Wear

The question of clothing is often discussed. The elderly bronchitic of a previous generation was frequently swathed in medicated wools, coloured flannels, and extra vests and shirts, in the hope of preventing chill. It is now recognized that the sweating thereby induced favours rather than avoids catarrhal spread. The clothing worn indoors should be as light as is consistent with conservation of the body heat. Woollen underwear is preferred by many, but various cellular materials, made of wool or linen, or of mixtures of these with silk or cotton, are available, and it should be remembered that two light cellular garments are more efficient than a heavy one of closely woven texture. The pullover is a convenient extra garment in colder weather, or for wear out of doors, under a light overcoat for walking or a heavier one for driving in a motor car.

What to Eat

Dietetic considerations are of considerable importance in these patients. In general, a plain and easily digestible diet is to be recommended, since it must be borne in mind that chronic cough, with its resultant emphysema, throws an increasing strain on the right heart, and that flatulent distension may lead to embarrassed breathing and distress. Some increase in the fats in the winter months is usually advised. Cod-liver oil and its modern substitute, halibut-liver oil, have a value by virtue of their richness in vitamins. In the obese the fats and carbohydrates should be reduced, and an attempt made to reduce weight or to avoid gain, though halibut-liver oil may be permitted. In those with asthmatic tendencies the chief meal should be taken at midday, and the evening meal should be very light and digestible. When cardiac failure supervenes a lacto-farinaceous diet may be necessary for a time. In bronchitics with gout, chronic renal disease, or with high blood pressure the appropriate diet should be strictly adhered to. Constipation is harmful, and must be guarded against.

Medicinal Treatment

The chief indications for treatment are to promote the expectoration of the bronchial exudate, to allay and prevent useless cough, and to treat special symptoms where necessary. At the same time the best treatment is prevention, and as little drug treatment as possible should be employed, since nearly all expectorants are gastric irritants and may disturb digestion or even lead to nausea and vomiting. Perhaps the commonest mixture of expectorants for these cases is that of ipecacuanha and ammonia, a form of which appears in nearly every hospital pharmacopoeia.

℞ Ammon. carb. ... ... gr. iv
Tinct. ipecac. ... ... ♏ x
Aq. camphorae ... ... ad ℥ j

Ammonium chloride is sometimes given in place of, or in addition to, ammonium carbonate. Iodides are undoubtedly of value in cases where the expectoration is scanty, viscid, or tenacious. A favourite mixture is:

℞ Pot. iod. ... ... gr. iij
Pot. bicarb. ... ... gr. x
Ammon. carb. ... ... gr. iij–v
Syr. tolu ... ... ʒ j
Aq. chlorof. ... ... ad ℥ ss

Ex aqua, t.d.s., p.c.

To this mixture may be added tinct. stramonii ♏ v–xv, or equivalent doses of tinct. belladonae or tinct. lobeliae aeth. if there is any degree of bronchial spasm or so-called bronchial asthma. In elderly anaemic patients the addition of a mild iron preparation to an iodide mixture may be valuable—for example:

℞ Pot. iod. ... ... gr. iij
Pot. bicarb. ... ... gr. xv
Ferri et ammon. cit. ... ... gr. x–xv
Aq. pimentae ... ... ad ℥ j

t.d.s., p.c.

Infusion of senega and camphor water are sometimes used as excipients for expectorant mixtures, but both of them are sickly and unpalatable. In cases of profuse expectoration, such as the form called "bronchorrhoea serosa," turpentine, terebine, and balsams of Peru and tolu may be tried. A typical prescription may be given, as:

℞ Terebene ♏ xv (or olei terebinth. ♏ v)
Balsam of Peru ♏ x (or syr. tolu ʒ j)
Mucilage q.s.
Aq. or mist. amygdalae ad ℥ j

Creosote may be given in perles of 3 minims or in the form of proprietary preparations, such as sirop. Famel or pulmo. Baily, in drachm doses. The well-known "hot-water mixture" of the Brompton Hospital is very useful to promote expectoration on rising in the morning, and to "clear the tubes" before retiring to bed. It should be taken in an equal quantity of hot water.

℞ Sodii bicarb. ... ... gr. x
Sodii chlorid. ... ... gr. iij
Spirit. chlorof. ... ... ♏ v
Aq. anisi ... ... ad ℥ j

For a dry, useless, irritating cough, lozenges such as the troch. glycyrrhizae, troch. ipecac. cum morph., troch. terperoin, the glycerin, or black currant lozenges may be tried.

Inhalations are of doubtful value, but a choice may be made of mixtures of eucalyptus, terebene, oil of pine, and creosote, with or without spirits of chloroform, and used either sprinkled on lint or in a Yeo respirator. Moist or steam inhalations of friars' balsam are sometimes comforting in dry catarrhal conditions, but should not be employed if the patient is going out of doors. Disturbed sleep or even insomnia is a common symptom, especially in exacerbations of the bronchitis or in superadded acute attacks. Any simple sedative mixture may be prescribed, or such preparations as the linctus diamorphinae cum ipecac. (*B.P.C.*), linctus diamorphinae et scillae (*B.P.C.*), syrup cocillana, or citronin in drachm doses. If these fail it may be necessary to resort to hypnotic drugs, such as sedormid, allonal, medinal, heroin, or morphine, but the routine use of these is to be avoided,

and if they are given care should be taken in the morning to promote the expectoration of the accumulated secretion of the night hours.

When cardiac failure threatens or supervenes, digitalis or other cardiac tonics must be employed in suitable doses. If marked cyanosis and orthopnoea occur from right-sided engorgement due to cardiac failure or to severe intercurrent bronchitis, venesection to the extent of 10 to 15 ounces may give relief and render the effect of the cardiac tonics more helpful.

Physical and Spa Treatments

Various forms of mechanical treatment have been suggested to compensate for the diminished elasticity of the lungs. Breathing exercises may be of real value to younger subjects and in those with bronchial asthma. The compressed-air chamber sometimes gives considerable relief, and even permanent benefit, in similar cases. It should not be advocated for patients of plethoric or obese habit, in those with high blood pressure, or those in whom haemoptysis has occurred. It is only available at certain institutions and at some special spas. The pressure is raised in the course of an hour two-thirds of an atmosphere, or about 10 lb. extra per square inch. The pressure is kept at this level for about an hour, and decompression should be slow and take a further half-hour.

Breathing into rarefied air, and mechanical compression of the thorax during expiration, though theoretically of interest, are now rarely employed. Certain spas have developed special treatments for these patients, such as Cauterets and Eaux Bonnes in the Pyrenees, La Bourboule and Mont Dore in the Puy-de-Dôme, Ems, Reichenhall, and Baden-Baden in Germany. At most of these the local waters are inhaled in finely divided form (" pulverization "), and at some of them, notably Reichenhall and Ems, compressed-air chambers are in use. Treatment at these places certainly benefits selected patients who can afford to go, and it is to be hoped that treatment on similar lines may eventually be started at some of the spas in this country with suitable climate and natural waters.

TO MELBOURNE AND BACK

PART I.—ACROSS THE U.S.A.

On the afternoon of Saturday, July 27th, the motor vessel *Georgic*, of the Cunard White Star fleet, will move from her moorings at Southampton and bear down the Solent for New York. Aboard her will be a large number of members of the British Medical Association on the first stage of the world tour which has been arranged for them by the Association in conjunction with Pickfords Travel Service, and which has as its main objective the 103rd Annual Meeting in Melbourne, 16,000 miles away.

Almost simultaneously with the departure of the *Georgic* the Canadian Pacific Liner *Duchess of Richmond* will leave Liverpool for Montreal, carrying another section of the party. This section will include those who desire to " travel British " as far as possible, and those who have already seen the United States and prefer to take the Canadian route to the Pacific as an alternative. The two groups will unite on the Pacific coast at San Francisco, and the whole party will make the remainder of the world tour together.

THE ATLANTIC VOYAGE

First we will trace the programme of the United States party. To begin with there is the *Georgic*, a beautiful ship of 27,000 tons, capable of a speed of 18 knots, which enables her to make a comfortable Atlantic crossing in seven days. With her fine swimming pool, spacious decks, modern gymnasium, and a cuisine for which her line is famous, the medical voyagers can look forward to a good beginning to their holiday at a pleasant time of year. On the morning of Sunday, August 4th, they will see the world-famous skyline of New York, and a few hours later will be engulfed in the astonishing life of New York City.

NEW YORK AND WASHINGTON

The little island of Manhattan, bought by Peter Minuet from the Indians in 1646 for 24 dollars, is now the hub of modern New York. Here gigantic buildings in stone and steel rear their heads skywards, while in them and through them pulsates a life of restless, driving human energy that almost takes away the breath.

After establishing their quarters at one or other of the magnificent hotels of New York, the visitors will be free for the rest of the day, and short enough it will seem, ending, perhaps, with one of Broadway's dazzling entertainments. Next afternoon a fascinating drive will be arranged, taking in Upper and Lower New York, Riverside Drive, Broadway, the theatrical district, the motley Ghetto, and the Bowery. Wall Street, the site of financial earthquakes, will be visited, and a stop made at the Battery to see the Aquarium.

On Monday evening the visitors' belongings are collected and they are taken to Jersey City station, whence the Baltimore and Ohio railroad carries them to their next destination, Washington, the capital of the United States, where two days packed with interest will be spent. The drive on the afternoon of Tuesday will show a succession of beautiful and dignified buildings, some of which bear great names: the Lincoln Memorial, the Capitol building, Old Georgetown, the White House, the Tomb of the Unknown Soldier at the Memorial Amphitheatre, and the wonderful new Arlington Bridge over the Potomac River.

The morning of Wednesday will give the travellers a chance to explore at leisure some of the many places which will still remain to be seen in Washington; but in the afternoon they must be on their way again, and from the vast Union Station they take train to Chicago, arriving there at 8.45 on the morning of Thursday, August 8th.

FROM CHICAGO TO LOS ANGELES

Chicago, the world's greatest grain market and the second city of America, will more than fill a day. The party will drive along the Michigan Boulevard and around the famous " Loop District," and have a glimpse of the Wrigley Building, the magnificent City Hall, perhaps the Union Stockyards, and other points of this progressive city. The headquarters of the American Medical Association and of its *Journal* are in North Dearborn Street. Chicago is one of the greatest transport centres of the world, and handles a ceaseless stream of traffic not only by air, rail, and road, but by water also, for the city lies on the southern shore of mighty Lake Michigan, whose waters cover 22,000 square miles. Like New York, everything about Chicago and its environment is conceived on a gigantic scale, by nature and by man.

That evening the party will board train for a journey of absorbing interest by the Atchison, Topeka, and Santa Fe railroad, through the States of Illinois, Missouri, Kansas, Colorado, and New Mexico. On their way across the Middle West they will pass through Kansas City, at the junction of the Kansas and Missouri rivers. From there a steady climb from 780 feet above sea-level, past Hutchinson, 1,530 feet, Dodge City, 2,486 feet, turning south-west at La Junta, 4,060 feet, to Glorieta, where the line reaches an altitude of 7,437 feet. Then the train drops to Albuquerque, at 5,000 feet, and after a brief halt to view this picturesque university city of New Mexico, the travellers enter Arizona, climbing again and

dropping again past the strange petrified forest area at Adamana. Then the rising railroad leads to a place which no man ever forgets, for on the morning of Sunday, August 11th, the dawn mists will be seen breaking up from the mighty Colorado River, 6,000 feet below, and circling in the depths of the Grand Canyon.

"Imagine a stupendous chasm, in places ten to thirteen miles wide from rim to rim, more than 200 miles long in the total of its meanderings, and more than a mile deep. The mighty river, the Colorado, has chiselled out the inner granite gorge, which is flanked on each side by tier upon tier of huge architectural forms—vertical mountains—carved by erosion from the solid rock strata which lie exposed in great layers to the desert sun. And all painted in colours of the rainbow. That's the Grand Canyon."

The whole day will be spent here, with a drive along the historic Hermit Rim Trail, stopping at Pima Point, Hopi, and Mohave. This is the territory of the Hopi Indians.

THE PACIFIC COAST

After a night journey by rail the party will find themselves next morning at Los Angeles in luxurious hotels. This city of a million and a quarter inhabitants is so interesting that a day and night will be spent there. The medical visitors will explore the "film city," Hollywood, and drive through the spacious boulevards, around the enormous film studios, and out to the residential district of Beverley Hills, returning by the beach cities of Santa Monica, Ocean Park, and Venice. Los Angeles is a strange mixture of the ancient and the exceedingly modern.

The next day's rail journey continues along the beautiful Californian coast line through Santa Barbara, the architecture and general atmosphere of which recall Spanish traditions. Santa Barbara is a charming city, and contains one of the finest of the chain of old Franciscan Mission buildings, which are such a feature of this country. Further north the "Big Tree" sector is entered, where the giant Californian redwood trees stand sentinel, their reddish-brown trunks rising into the air for hundreds of feet. The long rail journey ends in the evening at San Francisco.

"Frisco," a city of parks, on the southern shore of beautiful San Francisco Bay, is built in a semicircle of hills. This will be the travellers' home for a night, and next morning they will enjoy the famous "Thirty-mile Drive," and go on to the Mission Dolores, the Sea Rocks, and Golden Gate Park. There is much more to be seen in this busy Californian seaport, but in the harbour the s.s. *Aorangi* will be awaiting them, and in the afternoon they will meet on board those members of the B.M.A. party who have crossed Canada while they crossed the United States.

S. Kourilsky (*Thèse de Paris*, 1934, No. 706), whose thesis is based on the study of 163 cases during the course of three years—of which eighty-two are described in detail—states that the development of pulmonary tuberculosis is undoubtedly favoured by repeated pregnancies followed by lactation. The first few months of pregnancy, and still more the puerperal period, undoubtedly have an aggravating effect on the evolution of pulmonary tuberculosis—that is to say, a tendency to exudation and caseation. The possible effect of pregnancy on pulmonary tuberculosis, whether treated or not, depends on the intensity of the active process, which must be determined by the history, radiological examination, study of the temperature, and result of the Vernes resorcin reaction. In cicatricial forms the effect is *nil*, while it is moderate in infiltrating forms, or those with recent cavities which have been treated by collapse therapy and are of sufficiently long standing, and more or less severe in the subacute and recent acute forms. Abortion should only be induced when it is a question of preventing aggravation of curable lesions which can be treated, and is contraindicated alike in mild or very severe forms of tuberculosis.

LIVERPOOL VOLUNTARY HOSPITALS

RATIONALIZATION PROPOSALS

A little more than a year ago a commission, with Lord Cozens-Hardy as its chairman, was appointed to advise on the position of the voluntary hospitals of Liverpool. The appointment was made by a co-ordination committee of the Liverpool general hospitals and the Medical Charities Committee of the Council of Social Service. The report of the commission has now been published, and proposes some sweeping changes so far as the teaching hospitals are concerned. As an initial step it is recommended that the four general hospitals—namely, the Royal Infirmary, the Southern, the Northern, and the Stanley, all of which are teaching institutions attached to the University—should be amalgamated under one governing body. With this would go an extensive rebuilding whereby, instead of four hospitals, all of them too small for the unit institution in which every specialty is represented, there would be two of optimum size, or not much below it, one of them an expanded "Royal" on the present site, with one of the other three added to it, and the other a new building combining the remaining two on a suburban or country site.

It is considered that the medical school requires not fewer than 500 general medical and surgical beds, without counting private beds, for teaching purposes. The largest of the present hospitals, the "Royal," has only 316 public beds. Under the new plan the two components of the system, the metropolitan and the suburban, would each have about 500 beds, and both would be fed from a common out-patient department located on the metropolitan site, which would thus, in effect, be an out-patient department to a 1,000-bed hospital. For the hospital away from the city Lord Salisbury has offered a site in Childwell Park, four miles from Liverpool, but this is on land dedicated as a private open space under the Town Planning Acts, and special consents would have to be secured.

ONE AUTHORITY FOR NINE TEACHING HOSPITALS

The second main proposal of the commission is that a voluntary hospitals committee of a representative character, covering the nine teaching hospitals (the four general hospitals mentioned above and five special hospitals), should be formed to determine questions of policy integral to the voluntary system and to negotiate with the municipality. This body would have a veto on extensions and capital expenditure by any of the participating hospitals. It would not be a loose aggregation of elements, but a real government, able to deal with each unit in the light of the needs of the whole. It is suggested that it should be an expert body, not consisting of direct representatives from each of the institutions, but that its lay members should be appointed from the hospitals by an electoral college system. Medical members would be elected by the Staffs Association, and the University and Merseyside Hospitals Council would be represented. It would also be able to make medical appointments in any of the nine hospitals, the hospital concerned being given additional representation for the purpose. There are in Liverpool ten other voluntary hospitals in various categories, but no special machinery for these is suggested at present.

HOSPITAL PROVISION IN LIVERPOOL

The following figures are taken from the *Social Survey*, published by the University of Liverpool in 1931:

Municipal Hospital Beds		*Voluntary Hospital Beds*	
General	3,576	General	891
Infectious	1,635	Women's	81
Maternity	512	Maternity	70
Children's	1,415	Children's	639
Sanatoria	860	Special	208
Total ...	7,138	Total ...	1,989

These figures relate to Liverpool alone. If the other Merseyside boroughs are included—Bootle, Birkenhead, and Wallasey—the municipal beds go up to 8,237 and the voluntary to 2,465. It is pointed out in the commission's report that recent legislation has made possible the unification of publicly controlled hospitals, with consequent co-ordination. On the other hand, in voluntary hospitals co-ordination is in its infancy, and each of the twenty hospitals in Liverpool has so far been autonomous. The committee is fully alive to the advantages of flexibility in the voluntary system, and attributes to voluntaryism the great tradition which Liverpool enjoys as a pioneer in several fields of hospital enterprise. Nevertheless, the voluntary principle may function none the worse for some co-ordination. Owing to lack of accommodation hospitals have been forced to turn away cases, particularly emergencies, of a class which would form valuable teaching material, and it is stated that the practitioners of the city have become so accustomed to disappointment on seeking admission for their patients that they have given up inquiring, with the result that there are now four times as many such emergencies received at municipal hospitals as at the voluntary. The effective control of medical teaching is also hampered by the fact that only one of the teaching hospitals, the "Royal," adjoins the university, the other eight being scattered about the city. The important hospitals are all on restricted urban sites, and of the four large general hospitals even the newest, the Northern, was built at the beginning of the century.

FINANCIAL ASPECTS

On a first glance the situation of the Liverpool hospitals is excellent, but the surpluses shown are largely due to the treatment of legacies as income. The commission doubts whether the hospitals would be wise to count upon continued increase, or even maintenance, of ordinary revenue. On the other hand, they have spent between them during the last six years nearly half a million on capital account, and the advantage of a central authority as now suggested to ensure that the money is laid out to the best advantage is obvious. In this connexion we quote again, not from the commission's report, but from the *Social Survey*, on the Merseyside Penny-in-the-Pound Fund, which embraces twenty-two voluntary hospitals. One of the objects of the fund was to preserve the independence of the voluntary hospitals, but the authors of the *Survey* point out that that is not likely to be realized, because arrangements have been made under the scheme for admission to municipal hospitals when accommodation in voluntary hospitals cannot be found, and a grant is made to the local authority for the purpose.

Other suggestions made by the commission include as a subject for discussion between the central negotiating body and the corporation: the provision of post-graduate courses for general practitioners at municipal hospitals, facilities for research workers, a single ambulance service for both municipal and voluntary hospitals, methods by which available teaching material in the municipal hospitals may be better used, and the provision of opportunities whereby young medical men and women on the staffs of voluntary hospitals may take part-time posts in municipal hospitals. As a first step the commission suggests that the chairman of the Liverpool Royal Infirmary should call a conference of representatives of the four general hospitals, at which the course of future action may be decided.

Postponement of the following conferences at Wiesbaden of German medical societies has been rendered necessary by a change in the date of opening of the school terms in March. The Deutsche Gesellschaft für innere Medizin will begin its session on March 28th instead of March 25th, as previously announced. Similarly, the opening date of the meeting of the Deutsche Gesellschaft für Krieslaufforschung has been postponed to March 28th, and that of the Deutsche Gesellschaft für Bäder und Klimakunde to March 29th. Joint meetings of these societies will be held at Wiesbaden during the conference week.

Reports of Societies

MINOR DISABILITIES OF THE FOOT

At the meeting of the Medical Society of London on January 28th, with LORD HORDER in the chair, the subject for discussion was "Minor Disabilities of the Foot."

Mr. A. S. BLUNDELL BANKART said that the foot was the most ill-treated part of the body. Intended by nature to be an active member, with which, and not merely on which, man should stand, walk, and run, it was provided with many joints which combined to give it a great range of movement, and furnished with powerful muscles whose function was not only to move the foot, but to preserve attitude and posture in all circumstances. The natural, unspoiled foot was completely flattened when the weight was put upon it and the muscles relaxed, and only bent into an arch when its powerful muscles were in action. These extremes of movement were seen in the feet of all primitive races who had never worn boots or shoes; in the feet of professional dancers, who, almost alone among civilized people, had preserved the natural mobility of the foot; and in normal children just beginning to walk. A flat foot was not in itself a deformity. The curved or arched condition of the foot was a posture determined by muscular action, and maintained only for as long as the muscles were in action. When the muscles relaxed the natural state of the foot was flat. One of the abnormalities of civilization was that from early childhood onwards the foot was encased in a stiff covering of leather, so that the movements were restricted and in time greatly diminished in every direction, and thus the foot came permanently to occupy an intermediate position from which it could rise or fall to a moderate extent, but never to the full extent of the natural supple foot. The commonest malady of the foot was foot-strain. It was not flat-foot from which people suffered, but inability to flatten the foot. With few exceptions a completely flat foot was painless, because it met with no resistance. When the foot had acquired a contracture or arch it could flatten or yield only as its restricted mobility would allow, and then it met with resistance, and flattening against such resistance meant strain on the soft parts, which was the commonest cause of pain in the foot. From postural foot-strain to traumatic foot-strain was but a short step. Everyone knew that sprain might be followed by stiffness or limitation of movement due to fibrosis or adhesions in and around the sprained ligament. Certain movements were limited by adhesions, and painful stretching occurred frequently during weight-bearing or other use of the foot. This was often called "traumatic flat-foot," but the foot was anything but flat. The almost universal conception of the arch of the foot as a normal anatomical structure had led to the conclusion that it must be supported when it gave way. This fallacy had become popular and commercialized, so that arch supports were bought with the same freedom as purgative pills or cough mixtures. The treatment of foot strain by arch supports had proved a miserable failure. The rigid support under the sole was not only extremely irksome, but destroyed the last remnant of spring and elasticity in the foot, and converted it into a rigid system on which its possessor stumped along in manifest discomfort. The rational treatment was to enable people to flatten their feet, or, in other words, to restore their mobility, so that they could yield without coming up against resistance which was the cause of foot-strain. Forcible manipulations, followed by massage and exercises, cured the vast majority of these cases, whether postural or traumatic. Mr. Bankart emphasized the word "forcible," because the proper manipulation of an adult foot often required all the strength a man could put into it.

Next to foot-strain the commonest malady was hallux valgus. The excision of the head of the first metatarsal

was unquestionably the best treatment. This operation had been objected to on the ground that it removed one of the chief points of support of the arch of the foot. He admitted that the head of the first metatarsal was the great take-off point in walking; nevertheless, the new head or stump of the metatarsal could quite well accommodate itself to this function, and the results of the operation, if neatly performed, were quite superior to those of other procedures. Excision of the head of the first metatarsal was also the only treatment for hallux rigidus. Anterior metatarsalgia was pain in the fore part of the foot, and might be either diffused or localized. Diffused anterior metatarsalgia was always associated with a contracted foot: the foot formed an arch which did not yield under pressure, so that all the weight was concentrated on two points. Excessive pressure on the ball of the foot and continual hammering of this part upon the ground were responsible for the diffused pain and tenderness beneath the heads of the metatarsals, to say nothing of the broad, flat callosities which so often added to the patient's discomfort. When the patient had exhausted every treatment to avoid excessive pressure on the fore part of the foot, and tried every form of shoe without success, it only remained to straighten out the foot by operation, so that he could distribute his body weight upon it. Localized anterior metatarsalgia was quite a different condition. Here the pain was not diffused, but definitely localized to one, or sometimes to two or three, of the metatarso-phalangeal joints. The first metatarso-phalangeal joint was a massive structure, the great weight-bearing part of the foot. On the other hand, the outer metatarsal bones were thin and slender, with narrow necks and small heads. Anterior metatarsalgia was simply due to bearing weights on the part of the foot never intended to bear them. Until the patient was forced to bear his weight on the great-toe joint he would not get rid of his anterior metatarsalgia. The treatment was primarily the rectification of the conditions which gave rise to the deformity, as, for example, the construction of the shoe. Failing this, anterior metatarsalgia was sometimes, but not always, cured by excision of the appropriate metatarsal head. It was rarely justifiable to amputate hammer-toe; it could practically always be straightened. A contracted little toe was often not only contracted but misplaced, and this could be straightened only by a plastic operation on the soft parts, generally an unsatisfactory operation, because it was not always possible to prevent the pressure of the shoe on this toe. The toe should be amputated if the patient consented, amputation of the little toe causing no disability, but only a detriment to the appearance of the foot.

General Discussion

Mr. ST. J. D. BUXTON asked as to the subsequent history of patients whose little toe had been amputated. Did not the fourth toe tend to extend after such amputation, so that the patient returned complaining that the pain had only been transferred from the fifth to the fourth? He described and illustrated the use of *x* rays in the diagnosis of osteochondritis.

Mr. P. JENNER VERRALL also condemned arch supports, together with any prolongation of the inner side of the heel, because this caused an added stiffness almost as bad as that of the metal stiffening. Mr. Bankart had said that operation was practically the only treatment for hallux valgus. He agreed that if operation were done the excision of the head of the first metatarsal was the only procedure, but what was called hallux valgus was often, in young people, a varus deformity of the first metatarsal. One hospital made a practice of excising the head of the first metatarsal in children of 10 having such a condition, but this he regarded as wrong. The relief of the metatarsal from strain in children would bring about a cure. As to the adducted little toe, this was, of course, often a congenital deformity. He agreed that amputation should be done. It was only when there were fastidious mothers who objected that he did a plastic operation, which was only a placebo. The little toe, like the appendix, was a disappearing organ, and a disappearing organ tended to become deformed. Any part of the body which was atavistic had the same tendency. All the speakers in the discussion had avoided the subject of painful heels, but one trouble which might be mentioned was "march foot," which was one of the mysteries of the war. Men unaccustomed to walking were put upon route marches, and got the condition originally called "march fracture." Little by little it was realized that "march fracture"—fracture of the middle of the shaft of the metatarsal bone—was not necessarily a fracture to start with, but began as a traumatic periostitis, theoretically due to abnormal action of the interossei, and eventually leading to a weakening of the bone, and sometimes fracture. If a patient were seen with a swollen metatarsus it was always worth while having an *x*-ray examination to discover the possible presence of periostitis. The condition was common among probationers in hospital, who, early in their training, did much walking in the wards.

Mr. NORMAN LAKE declared that he still believed in the longitudinal arch of the foot as the old anatomists understood it. The heel, to begin with, and from the evolutionary point of view, was an essentially human character. It was developed somewhat in the anthropoid apes, following upon their adoption of an upright posture, but it was not truly developed until man. As a mere matter of mechanics, the os calcis was bound to grow out in a downward and backward direction, and if it grew downward there must be an arch to the foot. He believed, therefore, that the human foot had normally and properly an evolutionary arch. In the second place: which was to be taken as the normal foot—that of primitive or of civilized man? The restriction of footwear had been too much emphasized as regards the tarsus. Restriction of movement was, after all, a common condition of the modern world. He regarded the arch as a fairly rigid structure which did not need the postural tonus of a muscle to balance it. The postural tonus of a muscle was only capable of exerting about one-fifth of the contractile pull of the muscle, and if Mr. Bankart would examine cases under spinal anaesthesia, when every iota of postural tonus had been completely abolished, he would find in the normal modern foot—that is to say, the foot of a person who had not come up for any foot complaint, but was being examined or operated on for some quite different condition—that it was still impossible to reduce the arch. He had himself applied the utmost force without making any difference at all to the arch of the foot. Ought the ballet dancer to be taken as quite a typical person? He doubted it. There were acrobats who were capable of throwing their heads backwards until their face appeared between their legs, but that degree of mobility of the spine was only attained by assiduous practice from early childhood. He was told that the ballet dancer had to spend eight or ten hours a day in practice for years before she achieved that perfect mobility of the foot. He thought her foot was abnormally mobile, and he believed the evolutionary destiny of the human foot was towards a rigid structure, not a flexible one, but one on which men would walk more or less as on a solid block.

Mr. J. E. H. ROBERTS mentioned that, defying orthodox practice, he had removed the tubercle of the scaphoid bone in the woman tennis player who had suffered severe pain and had vainly sought relief in other directions. The result was not only to relieve her pain, but to enable her to resume her place in the tennis tournaments. Mr. G. H. COLT said that many men in training for sprinting races showed an abnormal increase in the longitudinal arch of the foot. He recalled one man who invariably won a long-distance race, however, whose feet were completely and absolutely flat. The appearance was most ungainly, but his running was extraordinarily good. The speaker himself during war service had double pneumonia and during convalescence developed flat-foot, and the only thing that brought him any relief in the acute condition of flat-foot was to put in two longitudinal arches, one on each side.

Mr. BLUNDELL BANKART said, in reply, that he had seen no trouble follow amputation of the little toe. Of course, if it were removed when it was merely one of a series of contracted toes, the trouble was not overcome. In such cases the other toes should be straightened while the little toe was amputated. The patient would be laid up for about a fortnight, and would not be happy on his feet for another week. As to excisions of the head of the metatarsal, he loathed doing these in children, and if possible he temporized by treatment with radiant heat, massage, and so forth, for the arthritis which they had got, and so allowed them to carry on without much harm. Mr. Lake's description of his inability to flatten the foot of a normal person under spinal anaesthesia confirmed his own description of the arch as a universal deformity. The amount of harm done by indiscriminate fixing of feet by arched supports was enormous, especially when it was remembered that the strained condition could nearly always be cured by manipulations. He had removed the tubercle of the scaphoid more than once or twice, and had seen no harm result; he did not see how harm could result unless the formation of an adhesion or fibrositis inside the joint was caused owing to the operation.

TREATMENT OF CHRONIC INFECTION OF NASAL ACCESSORY SINUSES

At the meeting of the Section of Laryngology of the Royal Society of Medicine on February 1st, with Mr. LIONEL COLLEDGE in the chair, the subject for discussion was the treatment of chronic infection of the nasal accessory sinuses.

RADICAL OPERATION IN SINUS DISEASE

Dr. FERRIS SMITH of Grand Rapids, Michigan, declared that the proper management of chronic sinus disease presented the greatest challenge to rhinologists to-day. It divided rhinologists into conservatives and radicals, the large majority of practitioners being in the first category. He himself came down heavily on the side of the radicals, and described and illustrated an extensive surgical operation which he said had produced excellent results in more than 700 cases. The ideal cure demanded a restoration of normal function; this was too much to expect in any long-standing infectious process, but he aimed at a clinical cure with minimum disturbance of function and complete eradication of infection. No operator, however skilful, by the use of intranasal methods could enter all the ethmoidal cells. The sphenoidal sinus also should not be treated conservatively, having in view the complications described by various authorities. The rhinologist ought to be able to see clearly every vestige of diseased tissue to deal with it accurately and safely without added functional or cosmetic disability. It was safest to approach the site externally, obtaining a practically bloodless field, under full vision, rather than to follow the common practice of working from below upwards into a field not clearly seen. Dr. Smith then, with diagrams, described his technique, beginning with a skin incision leading down to the palpebral muscle, and making an extensive exposure.[1] He operated not only on the ethmoid and frontal sinus, but the sphenoid also, and removed the whole of the infected mucous membrane in a large sinus cavity, having never found any part of it worth preserving. He provided a skin-lined duct for drainage and ventilation of the high frontal portion. The muscle was closed with interrupted catgut sutures and the skin with interrupted horsehair. Most patients complained of post-operative headache, persisting for from three to thirty days, but this was controlled by aspirin or aspirin and phenacetin. There was diplopia for a similar length of time, and he had seen one case of permanent diplopia result. There had been five deaths in his series of 700 cases. A few cases resisted all efforts to reduce excess of mucus; this was due to some metabolic process rather than to residual infection.

[1] A detailed account of the method appeared in the *Archives of Otolaryngology* (American Medical Association), 1934, xix, 157.

LAVAGE IN CHRONIC SINUSITIS

Mr. A. LOWNDES YATES said that in a preliminary investigation of the rate of ciliary action in various forms of sinusitis it had been found that sometimes the ciliary action was paralysed, but would recover if, on several occasions, the sinuses were emptied of their contents and thoroughly douched out with saline. He found also, however, that the methods of instrumental lavage which he had at his disposal did not permit him to empty the smaller sinuses of their contents, and that these, therefore, caused reinfection and a return of ciliary palsy in the sinuses which had been treated. An investigation of the matter seemed to prove that to fill sinuses with various solutions, such as ephedrine, was often insufficient, and that they must be emptied. A method was therefore tried by which it was found that this could be done, and the instrument which was designed for this investigation had now been modified for the purposes of treatment, and was demonstrated to the Section. It was a method of mechanical lavage with a vacuum douche. If the sinuses could be cleansed efficiently a variety of cases could be treated with success, but in certain others the cleansing would not produce a cure of the condition, because the mucous membrane had reached a stage from which it was unable to recover. Operative measures must then be employed. Cases of open sinusitis rarely required operative measures, and cleansing, with some simple treatment, would effect a cure. The use of the instrument was contraindicated in all acute conditions.

SUPPURATION BELOW MIDDLE TURBINAL

Mr. T. B. LAYTON limited his remarks to suppuration below the middle turbinal. The principle of treatment was mentioned in Lister's great paper in the *Lancet* in 1867—namely, that an inflammation tended to get well by itself if the cause of the irritation was removed. Most of the mistakes arose through making a diagnosis of frontal sinusitis. This was not an entity—anatomical, pathological, or clinical. Fronto-ethmoid suppuration differed from maxillary sinus suppuration in that the products of inflammation must flow past the normal openings down into the nose. There was no way of making a separate opening into another part of the nose. The swollen mucous membrane at the point of exit was the place where the obstruction occurred, and the irritation that caused the swelling in this area was due to the products of inflammation arising from the ethmoidal cells on the one hand and the maxillary sinus on the other. The largest of these cells was the maxillary sinus, and pus from the maxillary sinus was the biggest factor in such irritation. If the pus flowing from the maxillary sinus at that point were removed then the swelling of the mucous membrane would go down and the pus would have an opportunity to flow away. The key to fronto-ethmoidal suppuration was the maxillary sinus, and in his opinion, whether there was fronto-ethmoidal suppuration or not, the first procedure should be lavage of the maxillary sinus. If that failed to cure, the next thing was to divert the products of inflammation from the middle meatus into the inferior meatus. The two operations which he suggested should be done were, first, the high removal of the middle turbinal, and, secondly, the high deviation of the septum, an operation which would frequently allow the middle turbinal to swing back towards the mid-line, so that a subsequent operation on the middle turbinal was unnecessary. The next thing was to decide on any procedure which would enable free drainage to be obtained from such cells as were not yet drained. These operations must be decided in each case by the operator at the time, but he suggested that the future of intranasal operative rhinology depended upon the conservation of the mucous membrane, and there should be no "wild scraping" among the cells of the ethmoidal region.

GENERAL DISCUSSION

Mr. C. GILL-CAREY said that five or six years ago he became dissatisfied with the results of his intranasal

operations on the ethmoid, and turned to the external method, finding, so far as the ethmoid was concerned, the results to be exceedingly good. The results with the frontal sinus were also good, but, unfortunately, in a number of cases, for a limited period only, disappointment arising perhaps a year or two afterwards when there was reinfection and it was found that the frontal sinus opening had stenosed. Similar trouble was experienced in the sphenoid. While agreeing in the main with Dr. Ferris Smith's technique, he joined issue with him as to the type of case for which this operation was necessary. At one time he operated on a number of asthmatics by a similar technique, and the results were equally good, but for a much shorter time, so far as the asthma was concerned. These were cases in which there was a typical allergic factor, not merely infection. In the end he felt that if removal was to benefit the case it should logically include all parts of the swollen mucous membrane, and that was out of the question.

Mr. WALTER HOWARTH said that he was in agreement with Dr. Ferris Smith's technique, which was almost identical with a technique he himself had published in 1921. He differed, however, with regard to the treatment of the mucous membrane. He understood Dr. Smith to say that he had never found a mucous membrane that was fit to be left behind. He thought also that there was not forthcoming in this country quite such a virulent type of case as that of which Dr. Smith had experience. He himself encountered many fronto-ethmoidal cases in which the sphenoid was not involved, and many cases of fronto-ethmoidal suppuration in which the frontal sinus mucosa, when inspected, was found not to be full of the abscesses and with the underlying osteitis that Dr. Smith had described. If the mucous membrane of the frontal sinus could be left behind, so much the better. After all, the upper part of the mucous membrane was not usually very markedly infected ; it was the lower part that was so swollen and congested. He believed in getting rid of every portion of the ethmoid right back to the sphenoidal sinus, but he did not think it necessary to remove the whole of the mucosa. It was known that in the maxillary antrum the ciliated epithelium did regenerate, but it was not quite so clear that that was the case in the frontal sinus ; it was perhaps reasonable, however, to leave the mucosa if not very grossly diseased. His difficulty had always been the maintenance of patency of the new frontal nasal duct that was formed.

Mr. H. G. BEDFORD RUSSELL said that Dr. Ferris Smith's insistence on visibility and a bloodless field appealed to surgeon and rhinologist alike. The speaker had been trying out the operation in a humble way for some months, and had had the opportunity of watching Dr. Smith perform it on nine occasions. He hoped soon to be able to shorten his own time of three hours to Dr. Smith's ninety minutes. With regard to the sphenoid and ethmoidal process, he could conceive that a growth of columnar-celled epithelium might be hoped for from neighbouring parts, but in cases where the patient was suffering from septic absorption from the sinus the complete operation was the only logical procedure. Who would think of taking out half an infected appendix and draining the rest?

Mr. G. H. HOWELLS said that Moorfields had been the principal source of his experience of this type of case, so that there were orbital complications, which meant that the infection had transgressed the limits of the sinus and some radical measure was called for. He had been working along the lines of Mr. Howarth's technique, and so far was quite satisfied with the results. He agreed with him that it was often necessary to denude the frontal membrane ; he had found that the upper and back part of the mucosa might be left. In the case of the antrum he was conservative, and tried an intranasal procedure. He had not had much experience of skin grafting in these cavities after operation, but he was trying it, and hoping for better results as to patency.

Mr. H. A. KISCH said that he had for many years carried out all operative procedures on the frontal and other sinuses by external methods, and he was satisfied that they were the only methods for getting permanently satisfactory results. He had never used skin grafts for the maintenance of the frontal sinus, and on examining a large number of his old frontal sinus cases to see whether the openings remained permanent he had found no difficulty.

Mr. ERIC WATSON-WILLIAMS thought that Dr. Ferris Smith had taken an unnecessarily gloomy view of chronic nasal sinusitis. One serious objection to external operations through the skin of the face was the unwillingness of patients to face a procedure which entailed visible scarring. External operation was to him only an exceptional measure when less drastic procedures had failed. It was essential to respect the mucous membrane, particularly of the turbinals. Any bad results he had encountered had been in early cases in which he had tried to remove the turbinals. To remove the inferior turbinal was a surgical crime, but removal of the middle turbinal gave rise to crusts and scabs of dried mucus—what was often called pus, but was really only inspissated mucus on the back wall. It was possible by conservative methods to open the cells of the anterior ethmoid ; he would not guarantee that every cell could be opened at the first sitting, but with Hajek's high resection, which left practically the whole of the middle turbinal intact, most of the cells could be opened, and by diving underneath and also upwards above the middle turbinal it was possible to open the rest. It seemed unnecessary to sacrifice that physiologically important structure, the turbinal. Hajek, in his earlier work, was distinctly severe on the ethmoid, but later he had become far more conservative.

Mr. HERBERT TILLEY, after giving an appreciation of Dr. Ferris Smith's technique and manipulative skill, said it was a question how far in this country patients would consent to have this operation done, as Dr. Ferris Smith did it, under local anaesthesia. The public knew the general anaesthesia which surgeons usually employed to be so perfect that he was afraid that it would be a long time before they were persuaded to have an operation done with local anaesthesia. He understood that Dr. Smith also carried out the more or less conservative operations which surgeons in this country were in the habit of performing, and reserved his major operation for those cases in which the intranasal procedure would not be of avail.

Sir JAMES DUNDAS-GRANT said that Dr. Ferris Smith's armamentarium was useful, but he noticed the omission of one instrument which he himself had found of great service—a backward-working sharp-edged punch with which portions of tissue could be removed without tearing. This had assisted him in many cases of anterior ethmoidal suppuration. He also drew attention to Canfield's operation on the antrum, an account of which he had published in the *British Medical Journal*.[1] If suppuration in the maxillary sinus was the crux of the matter, Canfield's operation was the operation of choice.

Dr. FERRIS SMITH, in reply, said that in his own practice he had a very definite standard for the classification of cases. Cases were studied carefully, every means being employed to make a proper diagnosis. In those which were air-containing the patient received therapeutic management ; borderline cases were left over for later observation, and only cases which were non-air-containing were the subject of this surgical procedure. He was sure that the sinus case in America was not different from the sinus case in London, where he had lately been operating. He still contended that it was not wise to leave any part of the membrane in a large sinus cavity in which there were gross pathological changes. He could not agree that the removal of the middle turbinal was a cause of crusting in the nose. A very large percentage of the cases he had for operation had been operated on one or more times before they came to his clinic. He had carried out the operation on young persons, though it was rare to see a chronic process in an individual under 20.

[1] *British Medical Journal*, 1923, ii, 874.

PROBLEMS IN OTOLOGY

At the meeting of the Section of Otology of the Royal Society of Medicine on February 1st, with Dr. E. A. PETERS in the chair, discussions took place on the deaf problem in early childhood and on the after-treatment of the radical mastoid operation.

DEAFNESS IN EARLY CHILDHOOD

Mr. PHILIP FRANKLIN, in a short paper on this subject, described the work of the research clinic for deafened children of pre-school age which was established at the Infants Hospital, Westminster, just over a year ago. The thirty-six children who attend the clinic, their ages ranging from 1½ to 5 years, are either deaf from birth or acquired deafness before the second year. The clinic, he said, was a social and educational effort to combat mutism, and the story of Helen Keller had been its inspiration. For stimulating the auditory channel and discovering what remnant of hearing might be present, an audio-frequency amplifier was arranged so that sound of high volume and necessary quality could be produced and any recognition on the part of the child could be watched. Standard gramophone records were employed to produce noise (clock-ticking, etc.), speech, and music. Mr. Franklin explained the Wegel and Lane chart, depicting areas on the basilar membrane that react to varying frequency, and the Gault teletactor, used to educate the sense of touch to recognize and differentiate vibratory impulses directed to the finger-tips. In dealing with these children, he said, valuable aid was obtained by making use of the child's imitative faculty. Miss KINGDON WARD said that the children responded to the use of the teletactor in a short time. The séances had to be of short duration, as the children soon tired. The importance of this clinic was that it dealt with children at an age younger than those received at any other centres. Dr. A. G. WELLS spoke in praise of the work.

RADICAL MASTOID OPERATION: AFTER-TREATMENT

Mr. H. V. FORSTER, in opening a discussion on this subject, said that the problem was largely one of how best to deal with the soft external meatal tube, whether without plastic, by plastic alone, or by means of skin grafting. In cases in which there was hard bone, and long-standing disease had not burrowed into the mastoid, a conservative splitting of the meatal tube could be done. The first results in cases in which plastic was omitted were good. Hard paraffin No. 7 could be used at the first dressing; removal of this afterwards *en bloc* might be simple, but sometimes it broke off. Was it possible to dispense with packing at the conclusion of the operation? His colleague did not insert packing, except just in the meatal entrance, and the results were satisfactory. He himself confessed to a preference for the loosely packed glove finger; it could be removed easily, and admitted of conservative treatment of the meatal tube. Syringing with a solution of mercury perchloride was an aid to rapid healing. Some patients whose cavities continued to discharge or to collect scales and debris were very tolerant of this state of affairs, and the condition of the cavity was a good deal influenced by the general health of the patient; in this latter respect ultra-violet baths were valuable. The president of the Section had pointed out that it was unphysiological to cover bone with a thin layer of epithelium; that was the reason for the employment of a thick graft of skin and subcutaneous tissue turned into the cavity. There might be disappointing results, in spite of the closest personal attention. Every skin-grafted case required careful attention afterwards. It was rare for further operative procedure to be required after the radical mastoid operation. Stenosis of the external meatus might call for plastic measures. Operative procedure on the Eustachian tube was sometimes necessary. Persistent tubal suppuration could be successfully treated by ionization. Silver nitrate solutions seemed to be successful at the tympanic end of the Eustachian tube. The hearing of the radically operated ear could be improved by a prosthesis of gauze treated with ointment. The hearing problem became more serious when the hearing on the other side was not good or when both sides had been operated upon. Perhaps the electrophone might be of some use in these cases.

Mr. C. GILL-CAREY said that he had looked up the records of cases in which a radical operation had been performed a second time. Some of the bad effects were due to a lack of continuity in after-treatment, in some the wrong operation had been performed, while in others, again, there had occurred an extensive cellular development. It was not difficult to miss an infected cell in a cellular mastoid, and to find that following a time of comparative healing the cavity broke down once more. He had been impressed by the excellence of the cavities left after labyrinthectomy, a fact which he attributed to the extra care taken after that operation. In only one or two cases had he left the cavity unpacked. Constant or repeated disturbance of the growing epithelium delayed healing. Bipp he stigmatized as "the lazy man's dressing"; it was unsuitable for prolonged use in a simple mastoid cavity. Successful skin grafting lessened the need for cauterization and helped the healing. The grafted area, however, was delicate, and needed regular cleaning to avoid ulceration of the thin epithelial layer.

Mr. A. J. WRIGHT thought that the idea of including in the operation a clearing out of the tympanic cavity, with attempted closure of the Eustachian tube, was based on a fundamental misapprehension. He stressed the importance of preserving the hearing of the only good ear. In the last nine years his practice had tended to greater conservatism, and he now tried in every case to leave the tympanum, including the attic. Mr. H. A. KISCH described his muscle-flap operation to close the large cavity left by the mastoid operation. He had used this since 1928, and of fifty unselected cases treated in that year 68 per cent. were dry and had remained so, and the hearing had improved, in many cases markedly so. In the 32 per cent. which were not dry the discharge had greatly diminished.

Mr. E. A. PETERS said that all would agree as to the necessity of keeping mastoid operation cases under observation. He found that cutting out a slot from the meatal sleeve was a rapid and accurate method of removing a piece of the tube. The opening was then extended by means of the finger, so that a rubber tube could be inserted into the antrum. He did not think it necessary to graft if the cavity was small. For a big cavity the use of Kisch's muscle graft saved much valuable time. Mr. E. WATSON-WILLIAMS considered that if an operation was done, leaving behind the tympanum and perhaps also the malleus, it was not the radical mastoid operation, but a compromise between a radical and a Schwartze. His custom was to use a wide plastic operation, skin grafting in a chronic case, and using bipp packing. A comfortable form of dressing was a combination of glycerin with a little ichthyol. He had had little trouble with exuberant granulations. If a fistula was present he did a vestibulotomy and cleaned out the fistulous part. Mr. J. F. O'MALLEY contended that if a cavity refused to heal after operation it was because some osteitis was still present. There would always be difficulties over operation cavities until there was a sure test as to the presence of osteitis. Sir JAMES DUNDAS-GRANT described his usual procedure in these cases, and expressed a preference for proflavine emulsion as a dressing. There was no need to stitch up the posterior wound entirely at an early stage; a small hiatus would aid drainage. To get rid of granulations he found the best course was to touch them with a very fine cautery point.

Mr. SYDNEY SCOTT said that the formation of a flap was not an essential part of the radical mastoid operation. He had been using a muscle graft to close the cavity for a number of years, but only in selected cases, not as a routine. Mr. W. J. HARRISON stressed the importance of keeping the deeper part of the cavity open so as to prevent the formation of granulations in that area. Mr. ALEXANDER TWEEDIE agreed with those who observed a conservative attitude towards the tympanum. The more he left the tympanum alone the greater the success he had. Mr. BELL TAWSE also spoke of the need for

doing as little as possible to the tympanum. He did not put anything into the cavity, but washed it out regularly with normal saline. Mr. RITCHIE RODGER said that if in doing the radical mastoid operation some infective spot were left at the other end of the Eustachian tube, this must interfere with the chance of a successful result.

BIOLOGICAL PROBLEMS IN CHEMOTHERAPY

At a meeting of the Royal Society of Tropical Medicine and Hygiene held at Manson House, London, on January 17th, with the vice-president, Dr. WILLIAM FLETCHER, in the chair, Professor WARRINGTON YORKE in conjunction with Dr. F. MURGATROYD presented a paper on "Biological Problems in Chemotherapy."

Professor Yorke said that since the empirical discovery of the therapeutic value of atoxyl in trypanosomiasis by Thomas of the Liverpool School of Tropical Medicine in 1905, chemists had been busily engaged in producing new compounds, but there was still an unfortunate lack of accurate knowledge regarding the mechanism of action of these drugs and their therapeutic application. The authors began their studies seven years ago, and for various reasons worked with trypanosomal infections. The first question they attempted to answer was: "Does a drug act directly on the parasites, or only after it has undergone some change in the host?" By the discovery of a new technique for the maintenance of trypanosomes (*T. rhodesiense*) *in vitro* at 37° C. for more than twenty-four hours, they were enabled to eliminate the host and study the direct action of drugs on the parasites. It was found that pentavalent arsenicals were relatively inert, but the corresponding trivalent compounds and the arsenobenzol compounds were amazingly active, killing trypanosomes when diluted a hundred million times. Parallel experiments *in vivo* showed a definite relationship between the minimum effective doses and the trypanocidal activities *in vitro* of respective drugs, suggesting that the trivalent and the arsenobenzol compounds acted directly, but that the pentavalent compounds required some change—probably reduction—in the body of the host before they could exercise their trypanocidal action. "Bayer 205" seemed at first sight to be an exception, but it might be that certain physical properties of this drug, such as diffusibility, accounted for the apparent discrepancy.

DRUG RESISTANCE

The question of drug resistance was next studied, and no support was found for the statement that resistance in some way depended on the host. It was found that trypanosomes made resistant to a drug in one species of host maintained that resistance when transferred to another species of host; that resistant strains could readily be prepared *in vitro* by exposure to drugs; and that resistant trypanosomes exhibited their resistance when tested *in vitro*. Resistance was therefore entirely due to a change in the trypanosomes themselves, and experiments showed that such parasites owed their resistance to the fact that they had, by a process of mutation, become relatively impermeable to the drugs in question; in all other respects they appeared identical with normal parasites. When once a strain had become arsenic-resistant it retained that character indefinitely. No changes had been observed in various resistant strains kept for more than five years and passaged through more than 500 animals, and arsenic resistance was found to be transmitted unimpaired through the biological cycle of the trypanosomes in Glossina. Furthermore, there was definite evidence that arsenic resistance was by no means a rare result of the treatment of human trypanosomiasis, and that resistant strains from these patients were being disseminated by means of the tsetse fly. The size, spacing, and number of doses of a drug were important factors in the production of resistance.

THERAPEUTIC USE OF PENTAVALENT COMPOUNDS

In an attempt to explain why, in therapy, the relatively inert pentavalent compounds were preferred to the exceedingly active trivalent compounds, an investigation was made into the changes produced in the blood by injection of such compounds. It was found that an intravenous dose of the trivalent compound reduced tryparsamide thioglycollate, conferred upon the plasma an immediate and enormous trypanocidal power, but that the titre fell with extreme rapidity. The trypanocidal titre of the urine, however, quickly rose, but this excretion was insufficient in itself to explain the rapidity and extent of the loss of drug from the plasma. It was shown, however, that the drug diffused into, or out of, the red blood corpuscles with extreme ease and speed. Following an intravenous injection, the drug was absorbed, therefore, by the corpuscles, and this accounted in some measure for the immediate disappearance of the drug from the liquor sanguinis. Following the arsenobenzol compound, novarsenobillon, the results were somewhat similar; diffusion into the corpuscles appeared to occur with almost the same ease and speed as with reduced tryparsamide, but the fall in titre of the serum was less rapid than with reduced tryparsamide, and was associated with a slower excretion in the urine. With the pentavalent compound tryparsamide, however, the situation was much more complex. The immediate titre of the serum was extremely low. After six to eight hours it rose, but only to a very modest level, whereas the titre of the urine rose to a very high level. These facts, together with other experiments, suggested that the drug was taken up by the red corpuscles, and part of it was then changed into some active substance, probably reduced tryparsamide. This active substance diffused out of the corpuscles produced a rising titre in the plasma, but owing to its simultaneous excretion into the urine, which became highly trypanocidal, the plasma titre never rose very high. It was also found that a haemoglobin solution prepared by laking the red corpuscles reduced tryparsamide to an active form. It was almost certain that other body cells, besides the red corpuscles, played a profound part in these processes.

GENERAL DISCUSSION

Dr. J. W. TREVAN congratulated Professor Yorke and Dr. Murgatroyd on their great contribution to this field of chemotherapy, especially in regard to their experiments proving that the arsenicals acted directly on trypanosomes. Two lines of therapeutic inquiry were possible. One could start from the beginning and work out exactly how the simplest drug worked, and proceed to the more complicated ones in the hope that some general law connecting therapeutic action and chemical constitution might be established. Then, and not till then, would it be scientifically justifiable to proceed to the next step—the manufacture of remedies for actual use. Or, as was the common practice, thousands of organic compounds could be produced and tested on animals, and certain of these selected by a process consisting largely of guesswork for clinical trial on man. Stimulated largely by the inspired empiricism of Ehrlich, German chemists had produced remarkable products along these lines; the chemical industry in Germany was one unit, and there was abroad there a faith in the possibilities of chemotherapy which was entirely lacking in this country. The English fine chemical industry was a series of units dissociated from the heavy chemical industry, and there was no English organization which could hope to compete with German synthetic drugs at the moment. The idea of gradually becoming dependent on foreign sources for supplies of synthetic chemicals was unsound; what was wanted was an institute in this country with chemotherapy in its widest sense as its main object.

Dr. T. A. HENRY said that the chemist had no guiding rules as to what he should synthesize, and particularly was this so when starting therapeutic work on a disease which had never been successfully treated. The chemist worked blindly and had to be guided entirely by the pharmacologist. It was deplorable that there should be so much labour wasted on chemotherapy, and if that labour was to be reduced and the procedure rationalized it was along the biological and biochemical lines of the paper to-night concerning the mode of action of drugs.

Sir HENRY DALE pointed out that pharmacologists had been unduly impressed with the supposed fact that drug resistance acquired in one species was not maintained in another species, but was reacquired with transmission to the original species. The method of Yorke and Murgatroyd of keeping trypanosomes longer alive *in vitro* had been a great technical advance, and their findings both in regard to the nature of drug resistance and to the direct action of arsenicals on trypanosomes were most important ; it enabled the pharmacologists to come back whole-heartedly to Ehrlich's original views on these subjects. One point he had difficulty in accepting—namely, that haemoglobin was the reducing agent responsible for the conversion of the pentavalent into the trivalent arsenical compound.

Colonel S. P. JAMES referred to the different staining reactions of malarial parasites in patients under treatment with quinine and atebrin when compared with parasites in non-treated patients, and expressed surprise that no changes in tinctorial affinity had been found in the arsenic-fast and ordinary strains of trypanosomes. Colonel CLAYTON LANE stressed the urgent need for applying the wise lines of investigation outlined that evening to the chemotherapy of anthelmintics. In his opinion the few anthelmintic drugs which were well known should be tested adequately on a proper scale before testing perfunctorily a million others.

In reply, Professor YORKE agreed that their experimental results were in harmony with Ehrlich's hypothesis, though they did not prove it: they certainly rendered Wertheim's hypothesis absolutely untenable. In regard to the substance which reduced tryparsamide in a solution of red cells, perhaps the term "haemoglobin" had been used a little loosely. He agreed it might be an enzyme as Sir Henry Dale suggested. Concerning Colonel James's remarks on the morphological appearance of ordinary arsenic-fast trypanosomes, Professor Yorke pointed out that he did not imply that nobody could distinguish between them—only that he himself could not.

TREATMENT OF CEREBRO-SPINAL FEVER

At a meeting of the Fever Group of the Society of Medical Officers of Health on January 25th, with the president, Dr. H. S. BANKS, in the chair, a discussion on the treatment of cerebro-spinal fever was opened by Dr. JOSEPH M. KENNEDY, senior medical officer, Lodge Moor Hospital, Sheffield.

Dr. Kennedy said that during the years 1931-3, 369 patients with cerebro-spinal fever were admitted into Lodge Moor Hospital, of which 132 died, giving a mortality rate of 33.06 per cent. Of these 132 deaths, fifty-two occurred within forty-eight hours of coming under treatment. The deduction of these cases gave a mortality rate of 25.26 per cent. The following table showed the age incidence and death rate among the 369 cases during the three years.

Age	Cases	Deaths	Death Rate
			Per cent.
Under 1 year	25	15	60
1 year and under 5 years	76	25	32.8
5 years and under 30 years ...	218	67	30.7
30 years and over	50	25	50
Total	369	132	33.06

Before 1931 serum prepared from previous epidemic strains was being employed ; since then, however, serum produced from the strains responsible for the prevalent epidemic was used. In the speaker's opinion the intrathecal route was the best, and gave the most satisfactory results. He used this method in all cases, and, where there were signs of a septicaemia, as indicated by the appearance of purpuric or petechial haemorrhages, intravenous and intramuscular injections were given in addition. Of the 188 patients who recovered during 1932-3 he found that meningococci disappeared completely from the cerebro-spinal fluid after one intrathecal injection in ninety-eight cases (52.1 per cent.), and that the meningococci disappeared in 148 cases (78.7 per cent.) after having three consecutive intrathecal injections of serum. He believed that the presence or absence of the organism in the cerebro-spinal fluid was the only criterion by which one could form an opinion as to the value of the serum ; in 81.25 per cent. of the deaths the cerebro-spinal fluid remained persistently positive in spite of daily intrathecal injections of serum. A dry lumbar puncture usually indicated a blockage of the foramina of Luschka and Magendie, in which case ventricular puncture would alone relieve the cerebral pressure. This could easily be done in infants. Dr. Kennedy preferred to do all lumbar punctures under local anaesthesia, and to avoid general anaesthesia except in those cases where the patient was wildly delirious and a general anaesthetic was unavoidable. The typing of the meningococcus during an epidemic was exceedingly valuable, as the particular type was always kept in view ; thus any change that might occur in the types was recognized, and, if necessary, the serum altered. He considered that it was unnecessary to use a multivalent serum containing all four types during an epidemic, as the particular type responsible for the epidemic was always constant. Until the type was identified one was fully justified in using a group serum. During an epidemic of cerebro-spinal fever, when a patient complained of headache and had some pain or tenderness on flexing the head—not necessarily neck rigidity—the examination of the cerebro-spinal fluid should be carried out without further delay. One could not stress too much the great importance of lumbar puncture in infants in cases where there were no definite signs or symptoms of meningeal irritation other than pyrexia with fretfulness or irritability. He stated his conviction that a number of infants died during an epidemic when the disease was not even suspected.

Dr. ALEX. JOE mentioned that in recent years meningococcal meningitis had only appeared sporadically in London, and in 1932-4 exactly fifty cases had come under his care. The gross fatality rate was 50 per cent. Intensive drainage by frequent lumbar puncture—cisternal and ventricular—and serum administration by these and the intravenous routes, while sometimes appearing of great value in individual cases, had not produced any striking statistical superiority over the daily lumbar puncture and serum administration practised by him in former years. He had found that prognosis depended on two main factors—namely, the age of the patient and the type of infecting organism. In his series of cases the most favourable age period was 5 to 20 years, with a case fatality of 29.4 per cent., whilst under 5 years it was 58.8, and over 20 years 62.5 per cent. Forty-one of the infecting strains had been typed, twenty-eight belonging to Group I and thirteen to Group II. In Group I cases the outlook was better than in Group II, the former showing a case fatality of 42.8 as compared with 84.6 per cent. in the latter. Surprisingly, the day of disease on which serum was administered did not seem to have affected the issue very much in his cases. When given on or before the third day it was 45.4 per cent., as against 53.5 per cent. after the third day.

The PRESIDENT referred to Ferry's work on the isolation of soluble toxins from the meningococcus and the preparation of a polyvalent antitoxin. He had had the opportunity of treating a small series of cases with Ferry's antitoxin, and was impressed with results obtained in bacteriological Group I cases. Severe cases, however, appeared to require an intensive mode of therapy in the early acute stage—for example, spinal serum twice daily in the first three or four days, combined with one or two intravenous injections. Cisternal puncture should be done under a general anaesthetic during the irritable and acute stage, and a fine, sharp needle should be used, as there was a danger from cisternal haemorrhage. If a case was not responding to treatment after five or six days, double ventricular puncture and injection of serum might be found useful not only in infants but at higher ages. This was a simple and painless operation, which could be readily performed by means of Purves-Stewart's

modification of Goetze's channel borer. Dr. J. S. ANDERSON referred briefly to the infrequent development of the disease in carriers, and quoted a case from his own experience. He also mentioned an improvised method of performing ventricular puncture after the fontanelle had closed.

Dr. G. F. PETRIE referred to the significance from the clinical standpoint of a specific anti-endotoxic component in anti-meningococcal serum. He commented on the considerable difficulties that were met with when the problem was investigated by the usual experimental methods, and pointed out the difference in this respect between anti-meningococcal serum and the ordinary antitoxic sera, such as tetanus antitoxin. The ease with which many multiples of the lethal dose of diphtheria or tetanus toxin could be neutralized by the corresponding immune serum, even when the serum-toxin mixture was injected into highly susceptible tissues, contrasted with the difficulty of demonstrating the presence of a specific antibody which was capable of neutralizing the endotoxin of the meningococcus.

Dr. R. A. O'BRIEN said that standardization of the antiserum was very unsatisfactory, there being no generally accepted method. Wadsworth attached great importance to the agglutination titre tested against chosen cultures. All one could do was to use this method and to employ for immunization as fresh cultures as were available through the courtesy of the Ministry of Health. Surgeon Captain S. F. DUDLEY said that, though it was rare, more than one case of cerebro-spinal meningitis sometimes arose in the same family. For instance, during the war a sailor, who was afterwards proved to be a carrier, went home on leave. Shortly after, both his wife and child died of cerebro-spinal meningitis. Case-to-case infection was rare, as there must sometimes be over a thousand carriers to each case of meningitis. Just lately, for example, there had been an extraordinary prevalence of cerebro-spinal meningitis carriers in Chatham; over 50 per cent. of the samples examined carried agglutinable meningococci during a period of over a year in which no case of the disease had been admitted to hospital. The great difficulty of assessing the value of different methods of treating this disease was due to the wide variation in the case fatality and clinical picture of cerebro-spinal meningitis at different times and places, irrespective of the therapeutic measures employed. As regards the president's case of intracranial haemorrhage following cisternal puncture, he had seen a case of intraventricular haemorrhage in a man who was apparently convalescent from cerebro-spinal meningitis, but this case had never had a cisternal puncture. The speaker drew attention to the fact that odd cases of meningococcal septicaemia were not infrequent during cerebro-spinal meningitis outbreaks. In such patients there might be no symptoms of meningitis, and the lumbar puncture fluid might remain clear throughout. These cases were not necessarily fatal, and could only be recognized with certainty by growing *N. meningitidis* from the blood.

Scotland

Edinburgh Royal Infirmary

When the annual meeting of the Court of Contributors to the Royal Infirmary of Edinburgh was resumed on January 29th (a notice of the first session was published in the *Journal* of January 19th, p. 124) it was reported that the average period of residence of patients showed a remarkable diminution in recent years. In the surgical wards the average length of stay ten years ago was 17.51 days, now it was 13.62 days; this had enabled a larger number of patients to be treated. The waiting list, numbering about 3,400 patients, constituted a serious problem, and had induced the managers to negotiate with other voluntary hospitals in the area concerning the possibility of further utilization of their available accommodation. The voluntary revenue of the hospital was well maintained, but there was a shrinkage of nearly £2,000 in interest derived from endowment funds. There was an increase in ordinary expenditure of £8,696, and this included additional expenditure on the milk supply of £2,000 as the outcome of the operations of the Milk Marketing Board. Legacies and donations for the financial year amounted to £75,336, but the combined deficiencies in the ordinary maintenance accounts had absorbed £52,315 of this, which should have gone towards meeting extraordinary outlays of the immediate future. Attention was drawn to contributions from Edinburgh citizens, and a comparison was made between the rate of subscriptions received some half a century ago and the present day. About fifty-five years ago, when the present Infirmary buildings were first occupied, and there was accommodation for 500 patients and treatment was provided yearly for 2,400 cases from the city, the contributions from individuals and firms in Edinburgh totalled £6,343, averaging £2 10s. per patient treated, when the average cost per patient was about £5. In the past year, when the hospital provided over 1,000 beds and treated 8,699 cases from the city, the total contributions from this source reached only £9,674, averaging about £1 per patient, while the average cost per patient had risen to over £8. The cost of managing the institution for a year had risen from £60,000 some twenty years ago to £160,000 at the present time, and it was considered that the citizens ought to increase their contributions to at least £12,000 annually as a permanent voluntary revenue. A rather similar state of affairs was said to exist in respect of country contributions.

Production of Speech

Physiological problems in relation to voice and speech were discussed in an address to the Royal Physical Society of Edinburgh by Dr. Douglas Guthrie on January 28th. The lecturer said that this country had been slow to realize the social importance of clear and concise speech, although the problems involved were now awakening some interest. In 1774 Lord Monboddo, an Edinburgh judge, had published observations on *The Origin of Speech* in six volumes, and since then much experimental work had been carried out. In 1896 Garner had claimed to be able to talk to a chimpanzee in its own language of about twenty words, and many other attempts had been made to train the anthropoid apes to speak. Two years ago an American professor had made a series of observations on a child and a chimpanzee reared in close companionship for almost a year, but although the ape had understood much that was said to him, he had not made the slightest attempt to speak. Speech was so essentially a human attribute that few of its problems could be solved by animal experiments. A closer acquaintance with physiology might be of great value to teachers of singing, but even the physiologist could not explain the exact role of the vocal cords. A century ago Müller had explained the mechanism of the voice, and this knowledge had hardly altered since his day, although quite recently the stroboscope had enabled a view of the vibrating vocal cords to be obtained as though by slow motion cinematography. The acoustic analysis of speech sounds had been the subject of many researches since the days of Helmholtz. Each of the twelve English vowel sounds had been found to have a characteristic double resonance, so that the vowel series might be arranged as a musical scale. The classification of consonant sounds, however, offered greater difficulty, and there was no clear-cut definition between consonants and

vowels. Consonants as a rule were classified according to their mode of production, but the term "stop position" was misleading. There was not much difficulty in recognizing some consonants, including those classed as explosives (p, b, etc.), fricatives (f, v, etc.), and nasal sounds (m, n, and ng). The work of the teacher of speech or song ought to be established upon a firm physiological basis, and it ought to be realized that the Church, the stage, the law courts, and the B.B.C. were not the only callings which demanded clarity of diction.

Dunfermline and West Fife Hospital

The annual report of the Dunfermline and West Fife Hospital shows that during the past year 1,523 patients were treated in the institution, as compared with 1,464 in the previous year, the average number of occupied beds being ninety-four, and the average stay of patients in hospital 21.3 days, as compared with 22.3 in 1933. The number of out-patients was 6,560, while in the preceding year it was 6,250. The total income was £10,750, as compared with £11,543 in 1933, this diminution being chiefly explained by a fall in income from investments. The total cost of maintenance was £9,572, as against £9,993 in the previous year, and the cost per occupied bed was £101 15s. The managers have been considering the question of again enlarging the hospital, but in view of the short interval that has elapsed since the last extension, they have decided they must wait until the income has increased to a figure sufficient to maintain a further enlargement of the buildings.

England and Wales

Hospital Almoners and their Work

The annual dinner of the Hospital Almoners' Association was held at St. Ermin's Hotel, Westminster, on February 2nd, under the chairmanship of Miss Winifred Voelcker. The guests of honour were Lord Luke, joint honorary secretary of King Edward's Hospital Fund for London; Professor Winifred Cullis of the London (Royal Free Hospital) School of Medicine for Women; and Dr. N. G. Horner, Editor of the *British Medical Journal*. Miss Voelcker, in welcoming the large company, said that the association was made up of women who held the certificate of the Institute of Almoners. The functions of the two bodies differed, but their aims were the same. All regretted the absence of Sir Farquhar Buzzard, president of the institute, but they were glad to have with them its indefatigable chairman, Dr. A. B. Howitt, M.P. Most of the members of the association were actively engaged in hospital social service throughout the British Isles and in the Dominions; they co-operated with the medical and nursing staffs and gave valuable help in hospital administration. More candidates of the right kind were wanted for this work, and the association hoped that many of the appointments which the L.C.C. proposed to make at its hospitals this year would be filled by women whom the institute had trained. Professor Cullis, proposing the toast of "The Association," recalled that the Royal Free Hospital—their chairman's hospital—was not only the first to open its doors to women students of medicine, but had been the pioneer in appointing a professional almoner, as long ago as 1895. Expressing her high regard and affection for lady almoners, she paid a tribute to their helpfulness and the spirit of comradeship that characterized all their work. Mrs. Alan Lendrum, in a brief acknowledgement, spoke of the interest of the almoner's profession, and of the pleasure felt by those who began to train for it when they discovered, as they soon did, that the hospital ward was a chamber not of horrors but of kindness. Mrs. Alan Coltart, proposing the health of the guests, offered a special welcome to Lord Luke, whose activities on behalf of voluntary hospitals and in other social work were known to all. His long experience as treasurer of the Royal Northern Hospital and on the council of the King's Fund had lent weight to his successful advocacy of payment to hospitals under the Road Traffic Act. The many trained almoners present that evening were delighted also to have among them Professor Cullis, to whom they owed much for her lectures in elementary physiology at the London School of Economics. Dr. Horner, replying for the guests, complimented the members of one of the youngest callings upon the great progress made in this important branch of social work, which added so much to the efficiency of hospital services by promoting economy and bridging the gap between what the hospital doctor prescribed and what could ordinarily be done for a patient in the difficult circumstances of a poor home. He admired the careful selection of candidates, their thorough training, and the way in which the very human work of the almoner was done without a trace of sentimentality.

Reconstruction of St. George's Hospital

The treasurers of St. George's Hospital, Lords Greville and Winchilsea, announce that the hospital is to be rebuilt on its present site at Hyde Park Corner, where it has stood for 200 years. The suggestion has often been made by those ill informed on the subject that the site might advantageously be sold by the hospital, which could put up a building somewhere else in the neighbourhood, or follow the example of King's College Hospital and move out of central London altogether. But the fact is the hospital does not enjoy the unrestricted freehold of all the ground on which it stands, and in the event of the sale of the site it would be called upon to buy the freehold of that part of the property which was acquired from the Westminster Estate in 1906 on condition that it should be used only for hospital purposes. There is no alternative site available near by which the hospital could afford to purchase, and as for moving out into the suburbs, this would not only mean lessened accessibility for patients, their friends, and students, but would be a complete break with those associations that have made St. George's so famous in English medicine since the early eighteenth century. Another consideration is that the hospital already has the open spaces of Hyde Park and Green Park at its very doors. The important decision as to whether the hospital should rebuild on its present site or move elsewhere was taken on the recommendation of a subcommittee of experts, many of whose members were at first in favour of a change of site but later were unanimously convinced, as was the Court of Governors, that the hospital should remain at Hyde Park Corner. It is proposed, therefore, to carry out the rebuilding and to equip and endow St. George's at a cost of close upon £1,000,000. The endowment will consist of 500 beds costing £1,000 each, and a rebuilding fund committee has been formed and a publicity campaign inaugurated to collect money. The president of the hospital, the Duke of Kent, has stated in a letter that he is "sure that it will not be long before the new St. George's Hospital takes its place among the best-equipped and most modern hospitals in the world." He has suggested that those who wish to subscribe to some charitable object to commemorate his wedding should give a donation to the rebuilding fund. With the gifts so assured, and a munificent donation from the Bernhard Baron Charitable Trust, followed by that of Mrs. Meyer Sassoon and Dr. Charles Slater, and a multitude of smaller gifts, the fund stands to-day at £61,000. In addition, Mr. E. W. Meyerstein has promised to subscribe £25,000 on the condition that eight others give a like amount.

St. George's ranks seventh among the great teaching hospitals of London in number of beds available (330). The long association of John Hunter with the hospital, apart from many other considerations, will commend the project for a new St. George's to the sympathy of the medical profession.

Vital Statistics

The Registrar-General's *Statistical Review, 1933* (Tables, Part II, Civil, H.M. Stationery Office, 2s.) has just been published. The chief subjects are: population; births, marriages, and divorces; migration; registers of electors in England and Wales; populations, births, marriages, and deaths in British Dominions and birth rates in foreign countries. A table is given showing the populations of England and Wales, Scotland, and Ireland as enumerated at each census from 1821 to 1931, and as estimated for each year 1894 to 1933 inclusive. The population of England and Wales is now estimated as 40,350,000 at the middle of 1933, the 1931 census figure being 39,952,377. The number of marriages solemnized during 1933 was 318,191, against 307,184 in the previous year. The number of decrees nisi made absolute in respect of dissolution or annulment of marriage was 4,042, an increase of 148 over the number for the preceding year. This is the highest figure recorded. The births registered numbered 580,413, a decrease of no less than 33,559 on the previous year's figure. The consequent birth rate of 14.4 per 1,000 population is the lowest recorded for England and Wales, being 0.9 below that for 1932, the previous lowest, and 1.4 below that for 1931. The only countries showing a lower rate in 1933 were Sweden (13.7) and Austria (14.3). The proportion of the sexes in the births registered during the year was 1,046 males to 1,000 females.

CORRESPONDENCE

The Riddle of the Psychoses

SIR,—To one who read with pleasure and approval the presidential address of Dr. E. Mapother to the Section of Psychiatry of the Royal Society of Medicine it is gratifying to peruse your leading article bearing upon this address under the above title in your issue of January 19th. The pressing need for team work in research as applied to psychiatry has been obvious for at least thirty years to those who have had experience of the difficulties which the problems involved present when the team is incomplete. The subjects to be covered are those stated by you, to which I would add physiology and—in the widest sense—pathology. It would seem that nothing short of the State, the few powerful local authorities, or a combination of the others could afford the expense involved, especially if careers are to be provided for the members of the team.

With regard to "institutes of psychiatry" (presumably research institutes) "with access to early cases," and "a psychiatrist in active charge of a large number of patients" (I cite from your editorial), no suggestion is made as to where these patients are to be located. There is only one place, in my opinion—the place that has been advocated, to my personal knowledge, for over forty years, but has not yet materialized in this country. I exclude the Maudsley Clinic, a special case, and one not quite germane. This place is a psychiatric clinic, part and parcel of the other clinics of the general hospital system of the university city with a medical school. The problem of the metropolis is a special one. I have often wondered, in a spirit of humiliation, what foreign psychiatrists must think of our lamentable backwardness in this matter. With the long-standing example of European countries—to go no further afield—before us it is, I consider, absurd to detail the functions of such a clinic. Foremost among them are tuition of students and research. I appeal with confidence to those who have systematically studied Continental psychiatric literature over a period of many years to support the opinion that by far the most important contributions have come from the (usually neuropsychiatric) clinics, and not from the institutions which, on the Continent, correspond to our mental hospitals. If this be conceded it follows that our contribution to the subject, had we established like clinics at corresponding times, would have been much more weighty than we can claim.

The point requires to be dealt with on the basis of adequate information, but I much doubt whether anything so elaborate, on so comprehensive a scale, as the kind of research institute which I believe you have in view is to be found in connexion with Continental psychiatric clinics. The Deutsche Forschungsanstalt für Psychiatrie, near Munich, is the particular research institute which, by reason of its reputation, comes to mind. Dr. Mapother will be better informed than I am as to the relationship between this institute and the Munich psychiatric clinic. Whatever this may be, the link between a research institute and clinical work, primarily at the clinic, but also at the local mental hospital, is obviously essential, the institute to be as near as possible to the former.

As one of the veterans in the branch of psychiatry, I am weary of academic discussion on the matter of psychiatric clinics and research, which has been indulged in in this country *ad nauseam* during the whole of my lengthy service. I trust we may look to the Board of Control to lay particular stress upon the importance of the research institute and the complete psychiatric clinic in its future annual reports, and its particular reports made to local authorities controlling mental hospitals connected with university cities. The policy of the reception hospital in the grounds of the local mental hospital is, in this case, in my judgement, a decided mistake. It is a policy such local authorities may adopt, through lack of information, unless the other policy is urged on them by their medical advisers or by authoritative professional pronouncement. The medical superintendents of these particular mental hospitals have, in my opinion, a special responsibility in considering and placing before their authorities the alternative policy referred to.—I am, etc.,

Hove, Feb. 3rd. EDWIN GOODALL.

Chest Hospitals and Clinics

SIR,—I should like heartily to support Dr. Maurice Davidson's commendation in last week's *Journal* of Dr. Heaf's admirably constructive and far-seeing article in your issue of January 5th.

Reform of the tuberculosis service in all its aspects is overdue, and perhaps especially in respect of the dispensary unit. Nearly twenty-five years ago Osler foresaw and predicted how detrimental to the community, as a whole, was likely to be the dissociation of tuberculosis work from hospital practice. Few physicians of experience in diseases of the respiratory system will dispute the accuracy of his forecast. The administrative difficulties then existing have passed. There are now many excellently equipped examples of rate-maintained hospitals throughout the country, and the voluntary hospitals more and more are prepared to co-operate with local authorities in establishing and carrying on public medical services. These are days of co-ordination, not of "splendid isolation."

Under present conditions, by reason of the detachment from hospitals of tuberculosis dispensaries, patients, in addition to running the risk of labouring under all the social disabilities mentioned by Dr. Davidson, are, in the main, deprived of the opportunities of modern lines of investigation and treatment available in an up-to-date hospital. The practitioner of the future rarely has the opportunity of seeing tuberculosis of the lung in its early stages, or of following the intricacies of a differential diagnosis in a difficult chest case. Left to himself the tuberculosis officer gradually loses the stimulating, and maybe the chastening, effect of contact with his colleagues in hospital, and frequently tends, for financial reasons, to drift into the administrative branches of our profession. Many excellent clinicians are lost in this way to the curative and alleviative side of medical practice. There are a few examples of almost model chest clinics attached to general hospitals in London and the provinces which might readily serve as a basis for reform, to the benefit of all concerned.—I am, etc.,

Oxford, Feb. 4th. WILLIAM STOBIE.

Surgery for Pulmonary Tuberculosis

SIR,—I have read Mr. George A. Mason's letter in your issue of January 26th (p. 178) with interest.

I have felt for a long time that the surgical treatment of cases of pulmonary tuberculosis in a general hospital is far from ideal. Proof of this impression is furnished by the experience Mr. Mason relates of a French surgeon who kept comparative statistics of cases treated by him in a general hospital and then transferred to a sanatorium with those operated upon at a sanatorium. The results in the latter were almost twice as good as in the former.

The objection is raised that the expense of equipping and maintaining theatres at sanatoria is too great for the relatively little use that would be made of them. It would be unnecessary to have theatre accommodation at every sanatorium, but in a given area one sanatorium should be so furnished. Cases requiring surgical treatment from the area would then be collected there. A visiting surgeon, trained and interested in thoracic surgery, could be appointed and be able to train an efficient staff. Segregation of cases and a properly trained staff are very necessary and much needed. To expect a case of thoracoplasty, for example, to do best in a general surgical ward, with perhaps a prostatectomy on one side of him and a case of gangrenous appendicitis on the other, is asking a lot; and such a state of affairs is fair neither to the patient, the surgeon, nor the nursing staff. —I am, etc.,

Leeds, Jan. 29th. P. J. MOIR.

Recovery after Complete Stoppage of the Heart

SIR,—I have read with interest and appreciation the record of the case, published in the *Journal* of January 26th, by Mr. Percival Mills of recovery after complete stoppage of the heart for five minutes. In an article on "Massage of the Heart and Resuscitation" in the January number of this journal in 1921 I reviewed my experiences with resuscitation of laboratory animals after arrest of the heart, and concluded as follows:

"All attempts, successful or not, at resuscitation after cardiac arrest in man should in the present state of knowledge be recorded. When it is possible—and it cannot well be possible unless assistance is available—accurate notes should be kept not merely of the sequence of events, but of the actual times of occurrence."

Since then I have come across few records of such cases in which the recording of the sequence and times has been done so helpfully as in the case recorded by Mr. Mills. Everyone with any experience of such accidents will sympathize with him in his difficulty of making exact records under unforeseen stress, and will be grateful to him for the candour of his statements and for his obvious desire not to overstate his case. I have no hesitation in believing as probable the fact that the heart was actually arrested for five minutes, and the onset of vigorous and rapid heart-beats coming on suddenly after feeble beats have been induced by massage is a phenomenon which is familiar to me from experiments on laboratory mammals. It may be of encouragement, and possibly of some assistance to others who have to attempt resuscitation after arrest of the heart, if I recall some facts from my experience.

I had an opportunity many years ago of perfusing the exsected human foetal heart four hours after an abortion. The heart failed to beat when perfused only with Locke's solution, but fairly vigorous contractions of the auricles and right ventricle occurred when adrenaline was added to the perfusing solution. I have kept an exsected mammalian heart in cold storage for twenty-four hours and revived it by perfusion with Locke's solution containing adrenaline. I have killed an animal by chloroform and started the heart beating again although massage was not begun until an hour after it had stopped. From these and other experiences I think one can fairly begin with an optimistic view of the recoverability of the mammalian heart.

Evidence from cases of drowning, poisoning, etc., lead one to have even less doubt as to the recoverability of the respiratory centre. In circumstances perhaps more nearly parallel to the case in question, I have killed a rabbit with chloroform, begun cardiac massage and artificial respiration twenty minutes after arrest of the heart, and found that natural respiration was not resumed until half an hour or longer after vigorous recommencement of the circulation. One can, therefore, also fairly begin with an optimistic view of the recoverability of the respiratory centre.

The crucial point, and one to which Mr. Mills makes an effective contribution, is the maximum length of time of complete stoppage of the circulation which the brain can withstand without irreparable damage. Mr. Mills writes: "I like to think that my rhythmic cardiac compression may possibly have kept enough circulation going to save it [the brain] from irreparable damage." He has every justification for so thinking, and I have dealt with this point in the paper quoted above.

"The difference between complete and incomplete stoppage of the circulation is enormous when gauged by the effects on the cells of the central nervous system. . . . This being so, it is more than probable that, for the purpose of deciding whether the cells of the central nervous system are capable of complete restoration or not, the time can be calculated not as from the start of spontaneous heart-beats but as from the time of beginning massage. This is a point of fundamental importance, and puts a different and more hopeful complexion upon the whole question of resuscitation."

It has been shown by others that, when attempts have been made to occlude the cerebral circulation by clamping the vessels to the brain, much more prolonged survival of the brain cells may occur if a mere trickle of blood through a small vessel be intentionally or accidentally left. It was shown by Gunn and Martin (*Journ. Pharmacol. and Exper. Ther.*, 1915, vii, 31) that massage of the heart can produce a far more effective circulation of the blood than one would have anticipated. For example, when a dye solution was injected into the cavity of the right ventricle of an arrested heart and cardiac massage was then carried out, after a few compressions the dye appeared first in the lungs and then in the carotid artery. A very short period of massage was sufficient to propel the blood from the right side of the heart to the systemic circulation. Those statements are true only if massage be properly performed. From a long series of experiments we came to certain conclusions

which I feel confident will apply also to the human heart. Massage must be done at a slow rate (for the human heart probably twenty to thirty compressions a minute). Compression must be gradual and relaxation abrupt. Massage must be intermitted as soon as spontaneous contractions begin and at intervals afterwards, otherwise too vigorous massage may interfere with the establishment of spontaneous beating.

The value of adrenaline in starting an arrested heart is beyond question (*Quart. Journ. Physiol.*, 1913, vii, 75). It is of value even if introduced into the pericardial sac, but naturally is most efficacious if it can reach the whole heart muscle, which it can do only through the coronary vessels. The experiments quoted show that massage can soon move an injected solution round the circulation so as to reach the coronary vessels. If one can be sure of striking the cavity of the ventricle, possibly that is the best method of giving adrenaline. It is a moot point, however, whether, especially if an assistant were available, it would not on the average be better to inject, for example, 5 minims of 1 in 1,000 adrenaline solution diluted down to 2 to 5 c.cm. into a vein as quickly as possible. Massage of the heart would soon get it into the coronary vessels. In resuscitating laboratory animals I found one discouraging factor that often nullified the efforts at complete recovery—namely, the occurrence of rapid cardiac failure immediately after spontaneous respirations began. This type of cardiac failure seemed to be prevented by atropine. Though I have not seen this phenomenon noted in man, it may occur and be overlooked. Since it cannot easily do any harm, I should suggest that, as soon as the heart-beats have been restarted by massage, an intravenous injection of 1/50 grain of atropine sulphate be given.

My object in writing is, first, to congratulate Mr. Mills on his successful case and on his presentation of it, and, secondly, to recall some observations bearing on resuscitation which have been made in the laboratory and which seem scarcely yet to have been fully utilized in the clinic.—I am, etc.,

J. A. GUNN.

Oxford, Jan. 29th.

Diphtheria Immunization

SIR,—With some diffidence I dissent from certain features of Dr. Guy Bousfield's letter in the *Journal* of January 26th (p. 181).

I agree completely with his advice against the premature use of aluminium-precipitate Schick prophylactic for routine diphtheria immunization, but I believe that T.A.F., the diphtheria prophylactic most free from undesirable secondary reactions, should replace T.A.M., not only for adults but also for children. Cost no longer prohibits the general use of T.A.F. Public health departments can now obtain 1 c.cm. phials of T.A.F. for about 1s. 3d. Moreover, I suggest that apart from special test groups, which may be chosen most conveniently from residential institutions, Schick-testing of children under the age of 8 should be abandoned except in special circumstances. Our aim is to secure Schick immunization for the greatest number: to achieve success we must keep the Schick procedures as simple and painless as possible. We can tell parents that two inoculations of 1 c.cm. T.A.F., given at an interval of four weeks or longer, will cause at least 90 per cent. of the children to develop long-lasting immunity to clinical diphtheria, and that the very small minority who develop clinical diphtheria after the two inoculations have only a mild and non-dangerous attack. In other words, we can claim that except in speed of development T.A.F. Schick immunization against diphtheria is little inferior to vaccination against small-pox.

I would recommend that, until T.A.F. is superseded by a more efficient and equally innocuous diphtheria prophylactic, every child should receive two injections of 1 c.cm. T.A.F. at a four-weeks interval about the age of 1 year, and another single injection of 1 c.cm. T.A.F. about the age of 5.—I am, etc.,

WILLIAM G. PATTERSON, M.D., M.R.C.P., D.P.H.

Weybridge, Jan. 28th.

SIR,—Referring to Dr. Guy Bousfield's letter in the *Journal* of January 26th, on diphtheria immunization, I am less unfortunate than he in my experience of the after-result of the immunization treatment by the "one-shot" injection.

I have to-day inspected nearly fifty children, aged between 6 and 13 years, whom I injected three days ago. One only showed a little local redness, swelling, and tenderness. Five others had a small lump which was slightly tender, and the remainder could scarcely find the site of injection.

No special precautions were taken on the day of injection, except that no violent exercise was permitted. In the case of adults there is certainly more reaction. In very few there are some constitutional signs, and in some others there is a little local swelling and tenderness. I inject in the loose skin above the olecranon, and a common expression is: "I feel as if I had bumped my elbow." Provided that the results as to immunization are as satisfactory as the three-injection method (and Dr. Bousfield does not question this in his letter) I think the convenience of a single injection and the saving of expense are sufficient to counteract the disadvantages of a slightly more severe reaction.—I am, etc.,

NOEL E. WATERFIELD, F.R.C.S.

Great Bookham, Surrey, Jan. 29th.

Reactions Following Gold Injections

SIR,—In view of the increasing publicity in the lay press as well as the two recent communications in the *Journal* (Dr. Geoffrey Holmes, p. 58, and Dr. Hickey, p. 178) on the toxic effects of gold in the treatment of rheumatoid arthritis, we should like to refer to our own experiences. During the past two years we have treated about a hundred cases of rheumatoid arthritis with various gold preparations, and we are very favourably impressed with the results, which we think are superior to those of any other form of treatment. We are in entire agreement with the views expressed as to the frequency of unpleasant reactions. These reactions in approximate order of frequency include: (1) pruritus, erythema, desquamation, or even exfoliative dermatitis; (2) unpleasant metallic taste in the mouth, with soreness and often ulceration; (3) diarrhoea, with slight abdominal pain; (4) albuminuria. They may occur singly or together. Such reactions may be brought about in at least two different ways—namely, idiosyncrasy or overdosing. We have seen only one example of the first, a woman who developed a scaly eruption immediately following each of three intramuscular injections of 0.01 gram of sodium aurothiomalate, given at wide intervals.

With regard to overdosing, we are rather at a loss to explain the wide variations we have encountered, and we feel that other factors must be responsible. We find that toxic symptoms may develop at any stage in the treatment, during either the first or subsequent courses of injections. In our experience, however, toxic symptoms are usually trivial, and we have had no serious complications such as those described by the above-named physicians. We have favoured the intravenous route,

using gold sodium thiosulphate, and this may be related to the transient character of the toxic symptoms in our cases. We note that all three cases referred to by Dr. Holmes and Dr. Hickey have been treated by intramuscular injections, using the oily suspensions. It may be that with these preparations absorption is retarded; and in this way there may be delayed excretion, allowing a cumulative factor to operate, which presumably would not follow intravenous injection.

We can only express the feeling we have acquired from our own not inconsiderable experience, and that is that small weekly doses of gold salts given by intravenous injection have not been followed by any serious reactions. —We are, etc.,

STANLEY J. HARTFALL.
HUGH G. GARLAND.

Leeds, Jan. 28th.

Spinal Anaesthesia

SIR,—The interesting account of 500 cases of spinal anaesthesia by Mr. E. R. Flint in the *Journal* of February 2nd (p. 197) prompts me to the following comment. The phenomenon noted by him in a few cases, in which there was a total anaesthesia of the body but persistence of respiration, is a constant finding when a total spinal anaesthesia is deliberately induced according to the technique described by Koster and Kasman.

Total spinal anaesthesia is produced by the injection of 250 mg. of neocaine, dissolved in 8 c.cm. of cerebrospinal fluid, into the spinal theca between the second and third lumbar vertebrae. Despite an anaesthesia which extends to the vertex, motor power is retained in the head, neck, and upper limbs. There is always a marked fall in blood pressure—in some cases the pulse becomes imperceptible—but respiration continues, and the maintenance of the extreme Trendelenburg position is enough to ensure an adequate cerebral circulation.

In my thirty-nine cases of total spinal anaesthesia induced by the Koster and Kasman technique there was no fatality. The operations included mastoidectomy and total paravertebral thoracoplasty. In no case was any vaso-constrictor drug used to control the blood pressure, which always returned to its pre-operative level within two hours. In this small series no headache or other post-operative complication was observed. The only practical disadvantage of this technique is the short period of anaesthesia obtained, which seldom exceeds forty-five minutes.—I am, etc.,

LAURENCE O'SHAUGHNESSY.

London, W.1, Feb. 2nd.

Hypertrophic Stenosis of Pylorus

SIR,—Professor Crymble, in the course of his interesting address on "Abdominal Surgery in Children" reported in your issue of February 2nd, referring to congenital hypertrophic stenosis of the pylorus, makes the following statement in regard to the diagnosis of this condition:

> "The presence of a palpable tumour depends much on the imagination and touch of the examiner, and is not really an essential test in the presence of visible gastric peristalsis, which is best seen immediately after a feed."

Professor Crymble's teaching must necessarily have a wide sphere of influence, and I feel bound, therefore, to comment upon this particular statement. My old friend and colleague Dr. F. J. Poynton has always emphasized the diagnostic importance of a palpable pyloric "tumour" in these infants, and my own operative experience amply confirms his view. Unless the "tumour" is felt, the diagnosis must be in some doubt. I have operated upon upwards of 200 of these cases, and in my series there were only five in which the "tumour" was not felt before operation. In three of these five cases I had the mortification to find, on opening the abdomen, that no hypertrophy was present. "Visible gastric peristalsis" may vary much in degree, and in any case in which the confirmatory "tumour" had not been felt I myself would not be persuaded to operate unless, in addition to the usual symptoms, the peristaltic waves were large and vigorous, and the infant preferably a boy and a first child.—I am, etc.,

T. TWISTINGTON HIGGINS.

London, W.1, Feb. 2nd.

Physical Training

SIR,—In view of the present adoption of measures for the improvement of national physique, which is long overdue, I should like to acquire a little information regarding certain phenomena which may occur during the process called "training."

It is common knowledge that trained athletes are highly susceptible to infections. Boat-race crews, tennis players, cricketers, and boxers figure very frequently on the epidemic list when in training. They are also prone to develop sore throats and cutaneous affections, especially furunculosis. It has recently been reported that the morbidity rate among Germany's youth has risen since the adoption of mass physical exercise by that country.

It seems to me that it may be dangerous to prescribe physical exercises for a man who keeps healthy and able to do his job efficiently, just as it would be a doubtful measure to make a radical change in his long-accustomed dietary regime. There is also the danger of short intensive courses which perform wonders and then the subject drifts back to his usual routine and becomes rather worse than before. It is essential that the measures should be gradual, regular, and continued indefinitely, and also that they should be suited to the particular needs of the subject and directed to the correction of his physical defects. Such measures must be endorsed with our commendation, but physical training tutors often overestimate the capabilities and enthusiasm of their pupils, and a pleasure when it is excessive becomes a labour, and interest lags.—I am, etc.,

DUDLEY P. GURD, M.B.

Portsmouth, Jan. 29th.

Qualification for Practice: Licences and Degrees

SIR,—I have followed with great interest the correspondence relating to the London University and its medical schools which has from time to time appeared in your columns, and the letter from "A Layman," which appeared on January 26th, to my mind absolutely fits the case. As a member of both the medical and veterinary professions I would like to support "A Layman's" proposal that there should be a common or standard final examination for admission to the *Medical Register*.

In the veterinary profession the problem was solved as long ago as 1844, when one body was created to take over the examination of students and the granting of the licence to practise. There are now five veterinary colleges training students for the examinations of the Royal College of Veterinary Surgeons. The diploma granted by the Royal College is the one registrable qualification recognized in this country, and the uniformity of the standard of examination is assured by the appointment of one examining board which visits all centres. Veterinary students who desire to take a degree in veterinary science have every facility to do so, but the degree does not confer the right to practise, and it is not generally granted until the candidate has passed the final examination of the Royal College, and so has qualified for registration. The Royal College

diploma is the hall-mark of a one-portal system of entrance to the profession. The university degree is an academic one, and should, of course, be evidence that the holder has reached a higher standard of professional qualification, but cases are not unknown in which a candidate has failed at the examinations held by the Royal College but has passed an examination in the same subject or subjects held by one of the universities. This, of course, is due to the varying standards required for a pass, and "A Layman's" statement that the average percentage of passes in the final medical examination varies in twelve centres from 53 to 80 per cent. shows that a man who has passed at one centre might have failed if he had been educated and examined at another. This unsatisfactory state of affairs is completely eliminated in the veterinary profession by the institution of the one-portal system of examination for registration purposes.—I am, etc.,

Royal Veterinary College, London, N.W.1, Jan. 30th. J. McCUNN.

SIR,—The letters of Sir E. Graham-Little (February 2nd, p. 227) and of "A Layman" (January 26th, p. 182) deserve full attention. Both revive the old policy of the British Medical Association, which expressed the opinion that there should be one-portal entry to the profession. Sir E. Graham-Little is inclined to favour a State examination, while "A Layman" favours the examination by a Joint Board of the Licensing Bodies. There are arguments for both schemes; but what is important is that the demand for one-portal entry should come from within the profession itself, and not wait until it is imposed from without.

It seems to me that the appropriate time for the discussion of this question was in the Report on Medical Education, which came up for approval at the Bournemouth Meeting last year. In criticizing this report I referred to the omission of the consideration of one-portal entry to the profession—a policy of the Association which has never been rescinded, but had apparently been dropped by its present leaders. If the policy of the Association had been pursued assiduously many of the difficulties antagonistic to its realization would have been overcome, and the institution of a State or semi-State entry to the profession would have prevented some of the difficulties now arising from the pretensions and claims of upstart cults.—I am, etc.,

Warrington, Feb. 3rd. J. S. MANSON.

Anaesthesia for Tonsillectomy

SIR,—Despite Dr. Sydenham's letter on this subject defending Dr. Shaheen's methods (*Journal*, January 26th, p. 179), I am still in ignorance of worth-while reasons for thus putting back the clock of medical progress. He mentions (1) "time-saving," (2) "shock and disturbance," and (3) "absence of inquests." The first seems no reason at all when the difference in time is not great without or with anaesthesia. As to "shock and disturbance," I am yet to be convinced that skilled anaesthesia, following upon medication with avertin, increases either. "Inquests" should be very rare in any case, and should only occur when there is imperfect "team-work." During the twenty-four years I have had charge of five hospital clinics I have escaped any death in the theatre or immediately afterwards. Working with avertin the theatre becomes a restful haven where previously it resembled pandemonium. There is total absence of fear among the patients of a children's hospital, and knowledge is soon spread that the operation is done whilst they are asleep.

Egyptian patients, it is well known, have nothing near the sensibility to pain that our more civilized people possess, but it is difficult to believe that the Birmingham child, if he were given a choice, would prefer that he should be held down, gagged, and that lumps of his throat should be twisted out by brute force, rather than he should awaken in bed to the knowledge that his operation was over before he even knew it had begun. Apart from this immediate experience, the psychic trauma in a highly strung child may be considerable. Why confine oneself to removing tonsils without anaesthesia? The surgeons of an older generation prided themselves on their power to do an amputation in so many seconds, yet nobody dreams of emulating them in the days when surgery may justly be called a merciful art.—I am, etc.,

Old Colwyn, N. Wales, Jan. 26th. WM. WILSON.

SIR,—Dr. Geoffrey Morey, in your issue of January 12th, says that "on occasions he has dissected tonsils without any sort of anaesthesia." I must, however, refer Dr. Morey to my letter in the *Journal* of January 5th. There I never suggested dissecting tonsils without anaesthesia. I said: "In Group 3, where vessels may have to be clamped, I prefer local anaesthesia as is described in Dr. Morey's paper, though the operation has also been done without anaesthesia." This refers to cases done with the guillotine and where bleeding may require clamping. Preparing the cases in the way mentioned in my letter, severe bleeding is unusual, and if it happens and the necessity for clamping arises, the vessels are clamped at once. In Group 3 local anaesthesia is used when there is fear that clamping will be necessary. All cases of dissection are done without a general anaesthetic, but with local anaesthesia.

When I was a student at Guy's, a good many years ago, I remember that at Chelsea no anaesthesia was used for tonsils. This is also the practice, I believe, in some Continental clinics. As I said in my letter, "this sounds brutal"; but one has to do it or see it done to appreciate it. This method in my hands, and in those of my colleagues who practised it, has proved quite safe.—I am, etc.,

Cairo, Jan. 24th. HASSAN BEY SHAHEEN, M.Ch.

SIR,—Some of us have striven for years to place the operation of tonsillectomy within the category of major surgical procedures, and have been so far successful as to make boards of management, even of general hospitals, realize that they must provide beds for this operation.

It was therefore with feelings almost of despair that one noted the trend of discussion on this subject at last year's meeting of the British Medical Association at Bournemouth. That such a subversive doctrine should be proclaimed at the Oto-rhino-laryngological Section is amazing. As one feared, the discussion has opened the flood-gates for "statistics," and unless a firm stand is taken we shall be back in the bad old position of regarding the operation of tonsillectomy in children as a legitimate out-patient procedure—a practice which is scientifically unsound and is fraught with great danger to the public. The risks of reactionary and secondary haemorrhage, sepsis, and shock are among the immediate results of returning children to their homes, and secondary results are grave and numerous.

The most recent development of this crude attitude is the amazing doctrine we have from Egypt—that no anaesthetic of any kind is necessary for the operation. This would not merit any notice but for the fact that some credence would appear to be given to it in this country. Tonsillectomy, in either the child or the adult, is a major surgical procedure requiring careful anaesthesia and retention in hospital for at least three days in the case of a child and six days in that of an adult.—I am, etc.,

Bath, Feb. 2nd. H. NORMAN BARNETT.

Registration of Osteopaths

SIR,—The medical profession, through its chief representative body the British Medical Association, has made a very fair and conciliatory offer to the osteopaths, which, if accepted in the same friendly spirit, would, I feel assured, solve the whole difficult question which now confronts the public. I am sure that neither the osteopathic body nor the members of the medical profession would wish to hear the public later on say, "A plague o' both your houses; they have made worms' meat of me." If the osteopaths will now come forward and agree to scrap that substantial modicum of mediaeval pseudo-science to which their original members appear to have been wedded, and also agree to have their students instructed to the minimal extent which is laid down as necessary by the General Medical Council, then they can get on to the *Medical Register* and have the same legal standing as any other member of the medical profession. There is nothing to prevent them from studying in their own osteopathic school at the same time to their hearts' content and practising that particular branch of the work afterwards if they wish. I notice that many of the up-to-date osteopaths openly repudiate the pseudo-science of their predecessors, and profess to be guided by sound anatomical, physiological, and pathological knowledge. Then why, in the name of everything that is reasonable, don't they come forward and enter by the door which we have held open to them?

Should the osteopaths not choose to accept the friendly offer which is made to them by the medical profession, and Parliament decides to give them legal standing to the extent which they demand, then I am afraid confusion will be worse confounded and an intolerable state of affairs will arise which will react very harmfully on the public in general; and after all, it is the public, and the public only, which must have its interests safeguarded. Let us imagine, for instance, a case where the head of the household employs an osteopath as the family doctor and one of the family suddenly develops acute appendicitis with a possibility of gangrene of the intestine supervening in a few hours; or suppose it is a case of sudden perforation of a gastric ulcer: will the osteopath adopt manipulative treatment, or will he straightway rush the patient to the nearest hospital so that he can have an immediate operation? If the osteopaths and the medical profession are to work together amicably side by side in the interest of and for the benefit of the public, they can only do so when they are both members of, and are controlled by, the same organized body, and I see no reason, if the osteopaths would only come forward as suggested, why they could not have proper representation in the General Medical Council.—I am, etc.,

Isle of Man, Jan. 18th. E. G. F.

Co-operation Between General Practitioners and Council Hospitals

SIR,—Returning after a period of twenty-five years spent in India I have been much struck by the improvement in the London infirmaries, now called hospitals and endowed with patron saints. There is one point in which they might still further imitate the voluntary hospitals to the advantage of both patients and practitioners. I refer to the custom in voluntary hospitals of supplying the practitioner who sends up a case for admission with information relative to the diagnosis, treatment, recovery, or death of the patient. With the L.C.C. hospitals one is left completely in the dark, and one is not even informed if the patient has died. Unless one personally calls at the hospital, and spends considerable time in making inquiries, one is left in complete ignorance, except for garbled accounts received from the patient or his relatives. I have always sent with my patients fairly complete notes, and should like to be assured that some use is made of them, and expect to receive a little information in return. Moreover, how are we to be expected to fill up the panel patients' record cards without any precise information? In the case of operation or death one would certainly like to know if one's diagnosis was correct.

I think this is a matter which should be remedied as soon as possible, and the mutual co-operation of general practitioners and L.C.C. hospitals thereby greatly increased.—I am, etc.,

London, S.W.15, Jan. 30th. H. C. KEATES, M.D., B.S.

The Study of Malignancy

SIR,—I hope you will allow me to say a few words with regard to Dr. A. H. B. Kirkman's letter on my book *Malignancy and Evolution*. But first let me admit that I have every reason to be grateful to the *British Medical Journal*, not only for the way it reviewed that book, but also for its treatment of others. Moreover, during many years your distinguished predecessor Sir Dawson Williams continually gave me access to your columns when I had anything to put forward by way of suggestion or criticism. Since an unqualified student, even of more than forty years' application, still remains a "layman," it must be owned that the reception my work has had is sufficiently remarkable to make me hesitate to ask for more. And yet, if what is now continually said to me by members of the medical profession carries any weight, Dr. Kirkman is surely right in asking a great professional paper to give him and his colleagues some advice as to how they are to take the *Times* letter of November 21st last. For this letter, signed by five of the most eminent scientific, medical, and surgical authorities, named by Dr. Kirkman, particularly commended *Malignancy and Evolution* to the medical profession. Dr. Kirkman seems to think that there must be a serious reason for such men to take a step totally without precedent in the history of medicine. Frankly, I must believe this to be the case: otherwise I should be lost in bewilderment. What, then, was their reason? They spoke cautiously, as is natural in a joint letter, but did they not mean that it was now time to have done with all this mystery about cancer? I cannot help believing that is what they meant when commending a definite view of malignancy as a natural disorder and one only too likely to occur in such a construction as the mammalian body. If to say this implies that here at last is the solution of the "cancer problem" so much the better. But, of course, I make, and can make, no claim to originating the basal suggestion that epithelium, by its very nature, gives rise to certain conditions of malignancy. Such a statement has been often made. But it remained a hypothesis. It had never in any sense been "proved," and I do not think it could ever have reached a degree of likelihood worth calling a "proof" without such a weapon of analysis as I forged for myself out of the logical tools easily at hand. If the particular phenomena of malignancy were to receive a reasonable explanation it seemed necessary, or so I thought, to acquaint myself sufficiently with all the biological sciences without exception, so that I could understand their general principles well enough to use each in its turn in studying the more general phenomena of growth and the conduct and economy of cells and tissues. It took me many years to do this, and I should be less or more than human if I did not desire to see so much labour used to clarify and direct cancer research. Beyond that I conceive of no higher reward than what has been said by the notable men who signed the letter in question.—I am, etc.,

London, N.W.3, Feb. 3rd. MORLEY ROBERTS.

Health and Human Progress

SIR,—Coming back from a journey round the world I am delighted to find the extensive and so appreciative notice which the *British Medical Journal* published on October 20th, 1934 (p. 732) of my book *L'Economie Humaine par la Médecine Sociale*. It is the greatest encouragement I could hope for, and I remember with deep gratitude that you have shown the same kindness towards my previous books. You may be interested to know that the negotiations for an English translation seem quite hopeful, and surely your article has been of considerable weight in this matter.

I want to give you my heartiest thanks. Your understanding support gives me a renewed faith in the future—and who could work without faith? You have indeed done very much for me.—I am, etc.,

Brussels, Jan. 21st. RENÉ SAND.

Fog Glasses for Cars

SIR,—In your report on a new glass called "nebulite," for use on car head-lights, an important physical point is overlooked—that fog is selective in its reflection, a greater proportion of the blue being reflected than the red. Infra-red photography is one of the best illustrations that the longer the wave-length of light the more it penetrates fog. Nebulite, which I understand has a sharp cut-off below the blue, should reduce the back-glare by filtering out the blue end of the spectrum, which is the one reflected, and by transmitting all the red. Therefore, since bicycle reflectors can only reflect red, they will be equally visible with a masked or an unmasked head-lamp, with the theoretical advantage in the case of nebulite of freedom from back-glare. Your reviewer fails to inform us whether this theoretical advantage is in fact present, and to what degree.—I am, etc.,

Worcester, Jan. 28th. W. O. MOORE EDE, B.Chir.

⁂ Our contributor writes in reply to Dr. Moore Ede: Confusion is apt to arise in discussing the advantages and disadvantages of coloured lights in fog by references to the photographic effects of infra-red rays. Given suitable apparatus and long exposures amazing photographs of scenes and objects can be taken through fog. But these infra-red rays are not part of the visible spectrum, and they are therefore invisible to the human eye. We cannot see them. The projection of infra-red rays into a fog would leave us in unrelieved blackness. Rays, to be visible to our eyes, must be refrangible; they must be capable of being reflected from the objects towards which our eyes are directed. Fog, the intervening veil or cloud of innumerable particles of moisture, reflects every light, white and coloured equally with the objects we want to see, but which we cannot see because of this illuminated cloud. To illuminate this cloud with red, amber, or any other coloured light does not help us to see through it. Theory and experiment are in agreement on the point at issue.

Another Surgical Puzzle

SIR,—The clinical memorandum in the *Journal* of January 12th (p. 58), under the title of "A Surgical Puzzle and the Solution," recalls a somewhat similar puzzle I had to deal with as house-physician at the old King's College Hospital in Lincoln's Inn Fields.

I was roused in the early morning to see a man who had fainted at work while on the night shift at a neighbouring printing works. A routine examination of his heart and lungs revealed nothing of note. In idle curiosity I ran my fingers over a black circular mark on the patient's back, just inside the angle of the scapula, looking not unlike a mole. To my surprise it felt hard, and proved to be made of wood—not unlike the end of a skewer. This foreign body proved exceedingly difficult to remove: double-handled lion forceps were necessary to extract six inches of lead pencil, the point of which was unbroken! This had been tightly wedged between two ribs. There was no explanation so far as to how this pencil got driven into the thorax. Just prior to his fainting he stated that he had been oiling the machines and lost his balance when stepping off a high box, fetching up forcibly against the wall on which were hanging several coats. One of these was eventually brought up to the hospital with a hole through one of the pockets. The pencil had evidently been lying in this pocket with its long axis at right angles to the wall, the point facing outwards. The man had come up against it so violently that no sensation was experienced as the pencil was driven in.

The after-history is of interest. He developed no signs or symptoms of any kind, either in hospital or in the convalescent home. I lost sight of the case until two years later. One afternoon I saw medical out-patients for a friend, and this patient was among them, in an advanced state of phthisis. Had the pencil episode any relation to the onset of tubercle? A difficult problem to settle if the case came under the Workmen's Compensation Act!

—I am, etc.,

London, W.1, Jan. 25th. S. G. S.

Recovery from Hanging

SIR,—In reference to this subject I would wish to recall a paper entitled "Fracture of the Atlas and Axis, with Crushing of the Spinal Cord: A Case in which Life was Prolonged for Three and a Half Hours by Artificial Respiration," published in the *Medical Chronicle* of September, 1898, by the late Professor J. W. Smith and myself.

The interest of this particular case is that the man recovered consciousness, and although he had no voluntary respiratory power beyond a spasmodic depression of the lower jaw and angle of the mouth, dilatation of the nares, and protrusion of the tongue, he replied to questions and spoke a few words, communicating his name. The case appears to be unique in literature. The opinion is expressed that in judicial hanging death may sometimes be due to secondary asphyxia rather than the primary nerve shock. The article gives full particulars, and a number of somewhat similar cases are quoted, and there is a fairly full bibliography.—I am, etc.,

Manchester, Feb. 4th. J. GRAY CLEGG.

Information on Twins

SIR,—I should like to endorse Dr. W. A. R. Thomson's appeal to the medical profession under this heading (*Journal*, February 2nd, p. 231). A study of the life-history of identical twins affords a unique opportunity of ascertaining many of the facts with regard to inherited disease tendencies in human beings and the genetic factors in tumours. Unfortunately identical twins are rare, and careful histories are seldom available. Ordinary twins are not of much interest, but the study of identical twins, who have developed from a single fertilized ovum, is most important. Identical twins always have a single placenta, and this should be sufficiently remarkable to attract the attention of the doctor attending the confinement, and a record of this fact establishes beyond doubt the question of identity in the twins. They are also always of the same sex; but this, of course, is no test of their identity.—I am, etc.,

London, W.1, Feb. 2nd. J. P. LOCKHART-MUMMERY.

Obituary

THEODORE THOMPSON, M.D., F.R.C.P.

Physician to the London Hospital

We regret to announce the sudden death on February 3rd at Great Missenden, Bucks, of Dr. Theodore Thompson of Portland Place, W., the well-known London physician and neurologist.

Harold Theodore Thompson, son of Henry Thompson of Chester, was born on April 11th, 1878. At the age of 18 he went up to Christ's College, Cambridge, with a scholarship, and graduated B.A. in the mathematical tripos of 1899 as sixteenth wrangler. In the following year he gained first-class honours in the natural sciences tripos, and then entered the London Hospital, winning the Price scholarship in anatomy and physiology. In 1903 he qualified M.R.C.S. and L.R.C.P., and took the M.A., M.B., and B.Ch. degrees at Cambridge. A year later he obtained both the M.R.C.P. and F.R.C.S. diplomas, and in 1906 he proceeded M.D., winning the Raymond Horton-Smith prize for his thesis on changes of sensation associated with gross lesions of the spinal cord; thus his bent was already towards the study of diseases of the nervous system. At the London Hospital he won the medical scholarship and the Sutton scholarship in pathology, and held in turn the posts of house-physician, medical clinical assistant, and medical registrar, until his election as assistant physician. He had also been house-physician at the Hospital for Sick Children in Great Ormond Street. He was elected a Fellow of the Royal College of Physicians in 1911, and examined in medicine both at the College and at the University of Cambridge.

Dr. Theodore Thompson was appointed a member of the Postmaster-General's departmental committee on telegraphist's cramp in 1911, and for many years acted as specialist medical referee to the Home Office for certain occupational diseases. This led to his appointment to the permanent medical committee set up by the International Congress on Industrial Diseases. He was also chief medical officer to the Royal Exchange, the Royal, and the Pearl Insurance Companies, and two years ago held office as president of the Medical Assurance Society. His writings included papers on syphilis of the nervous system in relation to life insurance, on the diagnosis of spinal cord disorders, and the annual oration before the Hunterian Society, on intestinal toxaemia in nervous disorders. On his promotion to be full physician and lecturer on neurology at the London Hospital he resigned from the visiting medical staff of the Poplar Hospital, and was elected consulting physician. During the war he served as physician to King Edward VII Hospital for Officers.

Dr. ROBERT HUTCHISON writes:

The sudden death of Theodore Thompson at a comparatively early age and whilst still in full activity has come as a great shock to his many friends and as a severe loss to the medical profession. He was an outstanding example of the best type of clinician, for although he had particular knowledge of neurology, of the diseases of children, and of life insurance work, he never regarded himself as a specialist, but always maintained a wide outlook over the whole clinical field. He early acquired a large practice as a consultant, and in that capacity gave of his best unsparingly, to both patient and practitioner. It is probable, indeed, that his forgetfulness of self actually shortened his life. He was, too, one whose simple human kindliness soon made him the friend of all who came in contact with him, and for this reason, as well as on account of his professional skill, he often received the compliment of being consulted by colleagues about their own health or that of some member of their families, for he was pre-eminently a doctors' doctor. It is not surprising that the demands of practice left him little time or energy for the public activities of the profession, even if his retiring disposition had not made these uncongenial. He was therefore rarely seen at meetings of societies, and for the same reason he wrote little, although his original articles, mainly neurological, were always of high quality—often of lasting value.

As a teacher he was at his best in the wards and out-patient room. His clear and practical instruction was greatly appreciated by students, and his special post-graduate demonstrations were always largely attended, whilst throughout his whole hospital career he set an example of single-minded devotion to his work and of an unvarying courtesy and kindness to everyone which will make him greatly missed. It may be said of him, in a word, that he won his way to the front rank by sheer ability and hard work, and that his great intellectual qualities were combined to an unusual degree with a singular modesty and simplicity. In no profession are such men common.

His home life was ideally happy, and the deepest sympathy will be felt with his family in their tragic bereavement.

[The photograph reproduced is by Russell, London.]

G. MATHESON CULLEN, M.D., F.R.C.P.ED.

Late Medical Officer, Scottish Department of Health

The death took place on February 1st at his residence in Minto Street, Edinburgh, of Dr. George Matheson Cullen, who was for many years one of the most prominent medical figures in Edinburgh, both as a practitioner and as a public official.

Cullen was born at Edinburgh in 1867, and after a preliminary education at St. Vincent's College, Castleknock, he took his medical course at Edinburgh, where he graduated M.B., C.M. in 1889, proceeding M.D. in 1892. He took the degree of B.Sc. in public health in 1895, and the Fellowship of the Royal College of Physicians of Edinburgh in 1931, having been a member of that College since 1921. He had also studied for some time at the University of Paris. Almost immediately after graduation he began to take an interest in the civic affairs of Edinburgh, and in 1900 he was elected to the Town Council. Here he served on many of the committees, and his work was particularly valuable on the Public Health Committee, to the convenership of which he was elected three years after his entry to the Town Council. In this capacity his professional knowledge and experience proved of great benefit to the city. He also served for some time as a bailie, being the first Roman Catholic to be appointed a magistrate of the city for several hundred years.

After membership of the Edinburgh Town Council for some twelve years he retired from participation in civic affairs when he was appointed, on the introduction of the National Health Insurance Act, as one of the medical officers under this scheme. One of the chief duties of his health insurance work was the superintendence of prescriptions, and in this connexion he wrote many reports

and did much work which was afterwards taken over by the regional medical officers when these were appointed. In 1920 Dr. Cullen was transferred to the Scottish Board of Health, and retired from the service of the Scottish Department of Health only some two years ago. For a time he was a manager of the Edinburgh Royal Infirmary and of the Edinburgh Royal Maternity Hospital, as well as being connected with other public and charitable boards.

Dr. Cullen possessed a personality of great charm and kindliness, which earned for him the regard and affection of those with whom his work brought him into contact. In addition to his valuable public and professional work, he was a man of wide culture, being a good classical scholar and taking much interest in literature, theology, philosophy, and particularly in the history of medicine. To the last of these subjects he made numerous contributions, of which the best known was a small book dealing with Vesalius, the Renaissance anatomist. Until the onset of a serious illness nine years ago he was a valued occasional contributor to the *British Medical Journal*. He is survived by a widow, one son, and daughters. The interment, which was private, took place on February 4th in Mount Vernon Cemetery, Edinburgh.

LIONEL CALTHROP, M.B.

Consulting Physician, Royal Bath Hospital, Harrogate

The death of Dr. Lionel Calthrop will be regretted by all who are interested in spa practice and hydrotherapy. Lionel Claude Everard Calthrop took the L.R.C.P.Lond. in 1887, and the M.R.C.S. in 1888, from the London Hospital, where he obtained a scholarship in obstetrics. In 1894 he took the Durham M.B. with honours, after holding the post of house-physician and resident accoucheur at the London Hospital, and was subsequently appointed physician to the Newcastle-on-Tyne Hospital for Diseases of Women. His early interest in gynaecology continued throughout his career, and many cases of pelvic disorder were sent to him when he took up the post of medical superintendent to the Woodhall Spa Baths.

Shortly after the war Calthrop came to Harrogate, and in 1922 he was appointed honorary physician to the Harrogate Royal Bath Hospital. He held this appointment till 1930, when he resigned and was elected to the honorary consulting staff of the hospital. During these last eight years of active spa practice, at an age when many men in more robust health would have felt justified in taking life easily, he gave of his very best to the hospital and various medical societies. In 1925–6 he was elected chairman of the Harrogate Division of the British Medical Association, and also undertook the duties of honorary secretary and treasurer of the Harrogate Medical Society. He took a full share in lecturing and giving practical instruction to the staff of the Harrogate Royal Baths. The thoroughness with which he carried out this work is evidenced by his book on hydrotherapy and physiotherapy, published in 1931 but largely based on notes prepared and collected for this course of instruction. Apart from local interests he was a member of the Royal Society of Medicine and ex-president of the Section of Balneology and Climatology, and only a year ago was appointed honorary treasurer of the International Society of Medical Hydrology.

The appointments he held show that he had the respect and esteem of his colleagues, but even more than for his willingness to take his share in all voluntary work Lionel Calthrop will be remembered for his quiet, unassuming personality. To-day an elderly patient who was attended by him during several years of a very painful and crippling disease, in referring to his death, said, "I am very grieved. He was so kind and gentle." It is by these very qualities that those who knew him best will remember him.

G. H.

A long and useful record of service to the British Medical Association was ended by the death of Dr. GEORGE ALEXANDER of Barrow-in-Furness on January 21st. Born in 1875, he received his medical training in the Universities of Glasgow and Dundee, graduating M.B., Ch.B.Glasg. in 1898, and obtaining the diploma F.R.C.S.Ed. in 1901. In the latter year he began general practice at Barrow, after a period of service as a ship surgeon, and during the war was attached to the local military hospital as radiologist. Thenceforward he devoted himself increasingly to this subject and to diseases of the eye, and was responsible for the organization of the *x*-ray department at the North Lonsdale Hospital. He was in charge of this department and also of the one concerned with ophthalmology until illness compelled him to withdraw from general practice towards the close of last year. Dr. Alexander was formerly also ophthalmic officer to the Barrow Education Committee, and a medical referee for the Ministry of Pensions. He had been a contributor to the *British Medical Journal*. Joining the British Medical Association in 1903, he was a member of the Executive Committee of the Furness Division in 1905–7 and 1926–9. He was joint secretary of the Division from 1914 to 1922, chairman in 1925–6, and representative on the Branch Council from 1908 to 1910 and from 1922 to 1924. He was president of the North Lancashire and South Westmorland Branch in 1929–30. Dr. Alexander was a popular and highly respected practitioner; he did outstanding work in connexion with the North Lonsdale Hospital, and was the oldest member of its council when ill-health compelled him to resign recently. He will be greatly missed by the Furness Division, and much sympathy has been expressed for his widow and three sons.

Universities and Colleges

UNIVERSITY OF OXFORD

The Board of Management invites candidates for the Francis Gotch Memorial Prize to send in their names and qualifications by February 16th to the board, Department of Physiology, Oxford. The examination will take place on February 23rd at 2.30 p.m., in the Department of Physiology. In accordance with the revised regulations, preference will be given in the forthcoming examination to candidates showing proficiency in biochemistry.

The Vice-Chancellor has appointed E. W. Ainley Walker, D.M., Fellow of University College, to carry on the duties of the professorship of pathology during Hilary Term, 1935.

The next dean's dinner for Oxford medical students will take place on Tuesday, February 26th, at 7 p.m., in the Chanticleer Restaurant, Frith Street, Soho, W.

UNIVERSITY OF LONDON

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

The Board of Management has appointed Sir Cooper Perry, M.D., to be its chairman for the year 1935. Mr. G. R. Oake has been appointed secretary of the School as from October 1st next.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

A meeting of the Royal College of Physicians was held on January 31st, when the President, Lord Dawson of Penn, reported on the work being done by the various research scholars on behalf of trusts with the administration of which the College is concerned: for the Prophit Trust by Colonel Maddock, Dr. Ridehalgh and Dr. Bousfield; for the Leverhulme Trust by Dr. Janet Vaughan; for the Streatfeild Trust by Dr. Jacobs and Mr. Griffiths; and for the Mackenzie-Mackinnon Trust by Drs. Bywaters and Bousfield. The President also thanked, on behalf of the College, the many persons who are voluntarily co-operating in the Prophit Tuberculosis Survey Scheme, and especially the Prophit Trustees, for their generosity.

Appointment of Representatives

Dr. Rupert Waterhouse was re-elected a representative of the College on the Council of the British Health Resorts Association and Dr. Arthur Shadwell as representative on the Queen's Institute for District Nursing. The following were appointed delegates of the College: Professor W. W. Jameson at the Seventh Imperial Social Hygiene Congress at the London School of Hygiene and Tropical Medicine, July 8th

to 12th; Dr. J. A. Charles at the Forty-sixth Health Congress and Exhibition of the Royal Sanitary Institute at Bournemouth, July 15th to 20th; and Dr. James Fenton at the annual congress of the Royal Institute of Public Health and the Institute of Hygiene at Harrogate, June 4th to 9th.

Lectures

The Milroy Lectures on "Infection and its Control in Children's Wards" will be delivered by Dr. E. H. R. Harries on February 28th and March 5th; the Goulstonian Lectures on "Respiratory Failure, including so-called Asphyxia Neonatorum" by Dr. Alan Moncrieff on March 7th, 12th, and 14th; the Lumleian Lectures on "The Evolution of Mind" by Dr. J. Shaw Bolton on March 19th and 21st; the Oliver-Sharpey Lectures on "The Biochemical Basis of Thyroid Function" by Professor C. R. Harington, F.R.S., on March 26th and 28th; and the Croonian Lectures on "A Clinical Study of Headaches" by Sir Edmund Spriggs on May 14th, 16th, and 21st. All the lectures will be delivered at the College, Pall Mall East, S.W., at 5 p.m.

Membership

The following candidates, having satisfied the Censors' Board, were admitted Members of the College:

Stanley Alstead, M.D. Liverp., Harry Rumbold Bathurst-Norman, M.B.Oxf., Richard Raymond Bomford, M.B.Oxf., Wilfrid Dykes Bower, L.R.C.P., Rupert Briercliffe, M.B.Manch., Doris Elizabeth Bunbury, M.B.Lond., Cyril Astley Clarke, M.B.Camb., John Lionel Hayward, M.B.Adelaide, Charles Laurence Heanley, L.R.C.P., Frederick Joseph Victor Jaensch, L.R.C.P., Russell David King, M.D.New Zeal., Rosalind Brackenbury Latter, M.B.New Zeal., Philip Leftwich, L.R.C.P., Austin William Drevar Leishman, M.B.Oxf., John Ernest Seton Lloyd, M.B.Liverp., Thomas Edward Lowe, M.B.Melb., Robert John Stewart McDowall, M.B.Ed., George Harper Pearce, M.D.Durh., Gordon Arthur Ransome, L.R.C.P., Frederic Gardiner Rose, M.D.Camb., Dhirendranath Sanyal, M.B.Lucknow, Victor Emmanuel Perera Senewiratne, M.B.Lond., James Alexander Smeal, M.B.Melb., George Geoffrey Evanson Smyth, M.B.Manch., Cicely Delphine Williams, M.B.Oxf., Roland Francis Wilson, M.B.New Zeal., Albertine Louise Winner, M.D.Lond.

Licences and Diplomas

Licences to practise physic were conferred upon the following 121 candidates (including eight women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and have complied with the necessary by-laws:

J. Adler, A. G. V. Aldridge, C. Anderson, D. E. W. Anderson, H. R. Arthur, R. A. J. Asher, S. H. Awad, G. T. Balean, D. S. D. Barber, R. Bevan, Brenda G. Billings, G. Blackburn, G. L. Bohn, A. P. Booth, B. B. Botha, H. S. Brodribb, S. G. Brook, R. Bruce, A. F. Bryson, C. Campbell, A. H. Casson, W. E. Clarke, W. B. Clegg, M. C. Condillac, E. C. Cordeaux, P. E. Cresswell, E. R. Dansie, J. E. Darlow, A. J. S. De Freitas, Shanti Devi, H. K. Doctor, A. J. Dubinsky, F. C. Durbin, G. B. Ebbage, D. M. Evans, W. J. Finegold, J. R. Forbes, Mercia Force-Jones, C. E. Garson, J. Geller, J. E. Giesen, P. Glazer, Muriel C. Goodchild, J. L. Gordon, S. A. Greenwood-Penny, P. Grugeon, W. E. Hadden, J. T. Hallett, J. P. Harrison, R. V. Havard, G. W. Hayward, G. W. Hearn, P. A. M. Heath, J. C. Henry, T. C. Henry, H. F. G. Hensel, K. F. W. Hinson, J. Holden, K. Hooper, D. A. B. Hopkin, P. W. Houghton, C. Houghton Brown, H. T. J. Hynes, J. E. Ives, W. H. Jones, M. R. Kark, G. H. W. Keates, A. H. Khan, E. H. Kitching, A. H. A. Koi, F. B. Lake, F. H. Lamb, W. S. Larcombe, W. A. Law, M. Lederman, J. Lees, W. Libertson, J. F. Lockwood, H. M. McGladdery, Margaret I. McHaffie, W. N. Mann, A. T. Marrable, J. Marshall, A. B. G. Mein, S. G. Mohler, R. S. Morris, Anisa Nagi, D. F. E. Nash, A. Pearlman, A. L. Peers, F. R. Pepper, A. D. Popat, T. S. Protheroe, S. Ramgoolam, Cecilia E. M. Rath, Eileen G. Rose, C. G. Roworth, J. K. Samuel, S. V. Sansom, H. Silman, J. Simon, B. N. Sinha, I. Slome, J. A. H. Smart, G. G. Smith, J. H. E. Summerhill, E. W. Tapley, R. H. Taylor, C. Tetlow, B. McN. Truscott, J. E. G. Vincenzi, M. M. Waldman, W. T. H. Wales, H. J. Wallace, H. Waterman, J. D. S. Watling, E. T. Weekley, G. Williams, J. G. Williams, A. R. Yates, J. G. Youngman.

Diplomas in Public Health were granted, jointly with the Royal College of Surgeons, to the following:

J. M. L. Burtenshaw, J. C. Chukerbuti, J. R. Godsall, D. B. Kulkarni, Louise A. Matheson, H. R. Paterson, A. Ryder-Lewis, M. A. B. Sabery, G. L. Stroud.

Diplomas in Psychological Medicine, Laryngology and Otology, and Tropical Medicine and Hygiene were conferred jointly with the Royal College of Surgeons. The names of the successful candidates were printed in the report of the meeting of the Council of the Royal College of Surgeons, published in our issue of January 19th (p. 135).

A Diploma in Medical Radiology was granted, jointly with the Royal College of Surgeons, to R. G. Hutchison.

SOCIETY OF APOTHECARIES OF LONDON

The Court has awarded the Gillson Scholarship in Pathology for 1935 to Frank Hawking, D.M.Oxon.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Dr. John Beattie will deliver three Arris and Gale Lectures on "The Anatomy and Physiology of the Hypothalamus" at the Royal College of Surgeons, Lincoln's Inn Fields, W.C., on Monday, Wednesday, and Friday, February 11th, 13th, and 15th, at 5 p.m. The first lecture will be on the anatomy of the hypothalamic area; the hypothalamic control of the heart and blood vessels and of the adrenal medulla; and the role of the hypothalamus in temperature regulation. The second lecture will deal with the effects of hypothalamic stimulation on gastro-intestinal function; gastro-intestinal lesions following hypothalamic injuries; and bladder effects following hypothalamic stimulation. The third lecture will be on the relation of the hypothalamus to metabolism; and the posterior pituitary lobe and the hypothalamus.

Medico-Legal

A PROSECUTION UNDER THE MEDICAL ACT

We have received the following communication from Dr. James Neal, general secretary of the Medical Defence Union:

On January 14th last Frederick Clear Davidson was prosecuted at York by the police on information brought to their notice by the Medical Defence Union. The offences with which he was charged were: (1) using the title of doctor, thereby implying that he was then registered under the Medical Act, 1858; and (2) making a false statement with intent to have it inserted in a register of deaths. The defendant was acquitted on the first charge and fined the maximum of £50 (including costs) on the second charge.

During the course of the case Mr. Hargrave, who appeared for the defence, stated that the defendant was in fact a Bachelor of Medicine and Bachelor of Surgery of the University of London. On the instructions of the Council of the Medical Defence Union I sought to verify this with the registrar of the London University, who informs me that Frederick Clear Davidson is not a graduate of the University of London, his name does not occur upon their files, and he is quite unknown to them.

NEGLIGENCE ALLEGED AGAINST DOCTOR AND DENTIST: WIDOW'S CLAIM FAILS

In the King's Bench Division, before Mr. Justice MacKinnon, on January 31st and February 1st, an action was heard in which Mrs. Catherine Warren of Bermondsey claimed damages against Dr. Donald Greig and Mr. James William White, a dentist, both of Bermondsey, for the death of her husband, a mechanical engineer, aged 36, which, she alleged, was caused by their negligence.

Mr. Rowland Thomas, K.C., for the plaintiff, said that Warren, who had had remarkably good health throughout his life, was taken ill in March last with acute pain in the back. Dr. Greig diagnosed lumbago or rheumatism, and a few days later, after inspecting his mouth, said that pyorrhoea was the cause of the trouble, and asked the patient to consent to dental treatment, which he did. Mr. White was then called in, and twenty-eight teeth, apparently sound, were extracted. This mass extraction took place in the patient's home; no suggestion was made that the patient should be taken to a nursing home or hospital, nor was any previous examination carried out as to how he was likely to react to bleeding. In fact he bled severely, and later in the day was sent for blood transfusion to St. Olave's Hospital, where he died the following morning. The cause of death was haemorrhage following the severe extraction.

Dr. H. J. Van Praagh, in evidence for the plaintiff, said that the extraction of twenty-eight teeth at one sitting was a major operation, which should not be undertaken at one sitting, even in a healthy man, certainly not without previous blood test. He understood the patient's spleen was found to weigh 16 ounces, which was three times the normal size, and meant that it could be palpated during life. Such enlargement should create a suspicion of myeloid leukaemia. He agreed that there were two forms of myeloid leukaemia, the acute form being very rare, and difficult to diagnose apart from a blood test.

For the defence, Dr. Leslie R. A. Wells, senior medical officer at St. Olave's, said that the patient was found post mortem to have acute myeloid leukaemia. With such a

condition the extraction of any teeth might result in death. A blood test would have revealed the condition, but there was no particular reason for making it unless the doctor had been told (as was alleged by the plaintiff, but denied by Dr. Greig) that there had been recent nose-bleeding.

Dr. Greig said that the patient had had three attacks of lumbago, and therefore he examined for a focus of infection, but found nothing but the pyorrhoea. The bleeding following extraction was heavy, and he gave the patient an injection of morphine. Later on, as oozing continued, and fearing a secondary haemorrhage, he obtained some haemoplastin (an hour's delay was due to the fact that the nearest big chemists were out of supply, and the drug had to be obtained from a distance). The poor quality of the clotting impressed him, and he made arrangements for the patient to go to hospital for transfusion, and he was removed there within little more than three hours of the extraction. If he had known of the nose-bleeding he would have had a blood test. Preliminary extraction of one or two teeth was made in certain conditions, but in subacute rheumatism he thought the usual course was to extract such teeth as was necessary at one operation. Mr. White, the second defendant, gave evidence, and other medical and dental evidence was called for the defence.

JUDGEMENT

His lordship said that, serious as a mass extraction was, if the patient had been in ordinary health he would not have died, and would probably have been in much better health to-day. But he was suffering from a rare and obscure disease, acute myeloid leukaemia, in which the blood lost its normal composition and consistency. The case turned on whether Dr. Greig should have diagnosed that disease. He was satisfied that the failure of Dr. Greig to discover by palpation the enlarged spleen did not constitute negligence, and he accepted his evidence that he was not told of the nose-bleeding and did not suspect it. As to whether in any event before such a serious operation a blood test ought to be carried out, he was not satisfied, having regard to the rarity of the condition, that the test was one which ought to be imposed. As for Mr. White, when a dentist was acting in conjunction with a doctor it was no part of the dentist's duty to discover the general health of the patient or the condition of his blood. The plaintiff had failed to establish any cause of action, and there would be judgement for both defendants. A formal order was made for costs in favour of the defendants, but their counsel stated it was possible it would not be enforced.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

The House of Commons this week gave second readings to the Herring Industry Bill and the Metropolitan Police Bill. It also began the second reading debate on the Government of India Bill. Medical M.P.s have privately discussed with Ministers the effect of the provisions of the last-named Bill on the public health and medical services of British India. Proposals agreed between the British and French Governments for promoting closer European co-operation were announced to the Commons on February 4th. On February 5th Mr. Stanley intimated a suspension of all awards whereby unemployment assistance had been fixed lower than the previous transitional benefit.

In the House of Lords, on February 5th, the West Riding of Yorkshire Mental Hospitals Board (Superannuation) Bill was read the second time. On the same day in the Commons Sir Hilton Young introduced Bills to confirm provisional orders relating to the Huntingdonshire Joint Hospital District and the South Chilterns Joint Small-pox Hospital District.

THE HOUSING BILL

The House of Commons last week read the Housing Bill a second time by 291 votes to 46 after two days' debate, and also passed through committee the accompanying resolution to authorize expenditure under the Bill.

Sir HILTON YOUNG moved the second reading on January 30th. He said the campaign against the slums had been successfully launched. During January, 1935, 5,000 houses for rehousing slum dwellers had been approved for immediate construction. They should achieve the full object of rehousing 1,250,000 people within five years. The House could now proceed with the direct attack upon overcrowding. Medical science showed that epidemic diseases, and particularly tuberculosis, grew in overcrowded conditions, and no single improvement for eliminating disease could do more than that of enabling people to sleep at proper distances from one another. How big the problem of overcrowding was would not be known until a survey was made, but the recent return of the Registrar-General showed 50,000 families living at a density of four or five to a room, and 180,000 families at a density of three or more to a room. Overcrowding was associated with the central areas of the towns, the areas built in the eighteenth and the first half of the nineteenth century. To remedy overcrowding means must be found for rehousing a large proportion of the dwellers in these central areas near their original homes. In the campaign the first essential was a standard of what was overcrowding, and the laying down of a national standard of accommodation. A national standard of accommodation had now been reached in agreement and in consultation with the housing authorities and with medical officers of health all over the country. Its two foundations were decency—the separation of the sexes over 10 years of age—and space—enough accommodation for each person. The standard was reached by saying that there should be so many persons per room, and to correct that by reference to rooms below a certain size. The standard need not be regarded as the ultimate ideal, but one upon which it was possible to get the reform under way. Elasticity in the standard would be needed at first, and the Bill provided that the Minister could make temporary extensions for districts which could not be readily fitted into the national standard at once. Extensions of the standard would be on the advice of the Housing Advisory Committee, which would be called into existence. The Bill would also enable local authorities to deal, by means of licences, with such a case as that of temporary residents or the influx of workmen into a neighbourhood for temporary work. After the national standard of accommodation was laid down a survey would be carried out by the housing authorities to ascertain where, and to what extent, there was overcrowding in excess of the standard. That would give for the first time a knowledge of the extent of the evil. The Bill empowered the Minister to fix the time in which each authority must complete the survey. The next step would be presentation by the local authorities of schemes for providing the accommodation needed by all who, as ascertained in the surveys, were overcrowded. It would be for the local authorities to say how many dwellings were required, where required, and whether they should be houses or flats. The Ministry would make sure that the schemes were efficient and met the needs of the case. In the old central areas of towns, where expensive sites were wasted by bad development and bad construction, the intention was that the authorities should take these areas into their own hands, clear them to the extent that was necessary, redevelop them as regards the layout, and then reconstruct or rebuild to house the greatest number of wage-earners possible under proper conditions. A difficult problem was that of the old middle-class house, now let off in dwellings of four, five, or six flats to working-class families, all living in a house which had only equipment for one family. In these areas a good deal of useful work could be done by reconditioning—improving the structure, attending to damp courses, putting in water-closets and bathrooms, attending to drainage, light, and air. Such work was included in the provisions of the Bill. Powers were given to housing authorities to take over slum houses in redevelopment areas under the same provisions as in the 1930 Act, and to redevelop, pull

down, reconstruct, and recondition other houses wherever necessary. The provisions on reconditioning were based on the recommendations of the Moyne Committee.

The scheme the Government contemplated must be supported by the full force of the law, but overcrowding should not be an offence if there was nowhere else to go. To overcrowd a house would be a punishable offence, first of all for the occupier, and secondly for the landlord if the latter did anything conducing to overcrowding. After an appointed day any fresh overcrowding would be a punishable offence. All existing tenants would be protected until the person who would otherwise have committed an offence had been offered alternative accommodation. A person who refused that accommodation and continued to live in overcrowded conditions might lose his protection. There was special protection for an occupant whose house became overcrowded owing to a child reaching the prescribed age (when it would be reckoned as half a person or as a person).

Subsidies under the Bill

There was no intention of returning to general subsidies for housing. The Bill would secure that preference for all subsidized houses would be given to those living under slum conditions, or overcrowded, or under bad housing conditions. Until housing authorities satisfied these preferences the houses built would not be freely at their disposal. The general rule of the Bill was that subsidies would be provided by the State wherever they were necessary for the building of houses at rents appropriate to the tenants for whom they were intended. Flats on the more expensive sites could not be built without a subsidy, and the Bill provided an automatic subsidy related to the cost of the site. The subsidy was also automatic on houses for agricultural labourers. Except for agricultural cottages, two-thirds of the contribution of public money would come from the Exchequer and one-third from the rates. The subsidies were designed to provide the overcrowded tenant with a flat or house at an inclusive rent of about 10s., or about 7s. without the rates. In rural areas the corresponding figures would be from 3s. to 5s. The normal in London would work out at about 11s. 4d., and that might apply in other cities where rents were high. The basis in the case of flats was the flat with two bedrooms. It was proposed to pool all previous housing subsidies for each housing authority, and also to stabilize the slum-clearance subsidy for the whole of the five-year campaign. The Bill proposed to encourage co-operation between housing authorities and the voluntary associations and public utility societies. To secure good management and to prevent the creation of new slums the Bill would introduce the possibility of the management of public housing estates being transferred to permanent bodies of management commissioners appointed by the housing authorities. That was an optional power. A Central Housing Advisory Committee was proposed to assist in the establishment on sound lines of the bodies of housing commissioners, and generally to advise the Minister on all housing matters.

Opposition Criticism

Mr. ARTHUR GREENWOOD moved an amendment declaring that the Bill involved unnecessary delay in the provision of houses, and that the financial aid proposed to local authorities was inadequate. He pointed out that of 40,000 cottages contemplated under the Housing (Rural Workers) Act only 2,000 had been built under the present Government; the 38,000 rural families lived under abominable housing conditions. The Government, by abolishing the subsidy, had discouraged local authorities from carrying out housing apart from slum clearance. The standards of housing proposed by Sir Hilton Young were too low, and contemplated that living rooms should normally be used as bedrooms. There was no assurance that baths and lifts would be provided in the flats six or seven stories high. The subsidies proposed were inadequate. The Labour Opposition objected to the invitation to local authorities to farm out their housing obligations, and the proposal about house management commissions was even worse. Mr. G. R. STRAUSS said that new compensation clauses inserted in this Bill would hold up slum clearance work in London by fully six months. Sir GEORGE GILLETT stated that in central London it would be impossible to provide the necessary accommodation except by means of flats. Mr. J. W. BANFIELD considered that Clause 12 of the Bill, enjoining redevelopment schemes, should apply to towns under 50,000 population.

Mr. W. S. LIDDALL said the Bill, in defining overcrowding for the first time, proposed standards on floor area, and not on cubic air space for each sleeper in a bedroom. In old houses where most of the bedrooms were low, where rooms were intercommunicating, and where many were under sloping roofs, and had small windows giving a minimum amount of light and fresh air, a floor area basis was wrong. Each bedroom should have a window or windows that would open, the total window area to be not less than one-tenth of the floor area. Mr. F. R. WEST said modern flats must have modern amenities, lifts, and perhaps central heating, and in most cases the block must not occupy more than one-quarter to one-third of the total land on which it stood. Over one-fourth of the working-class population probably lived in overcrowded conditions, and at least 4,000,000 houses needed replacing as out of date.

Mr. DAVID GRENFELL feared that the Bill, designed to prevent overcrowding in houses, might result in a density of 50, 100, or 200 persons per gross acre on sites redeveloped as flats. They could not escape slumdom if they put too many people on a unit of land. There was no provision in the Bill for co-ordinating the problem of transport between work and place of residence with the housing conditions of the country. South Wales, in more prosperous days, had planned dormitory towns to which, by suitable transport, men could be taken ten or twelve miles from the narrow valleys in which they worked.

Medical Point of View

When the debate was resumed on January 31st, Dr. CHRISTOPHER ADDISON pointed out that under the Bill a redevelopment scheme could only be undertaken where the area contained fifty or more working-class houses, and provided the houses overcrowded or unfit for habitation constituted one-half or more of the working-class houses in that area. That gave no elbow-room for making new streets, no opportunity for replanning the area. It shut off from assistance under the Bill the towns where this definition could not be applied in any part. In rural areas the assistance of the Bill was limited to abatement of overcrowding, which was difficult to ascertain even in the most dilapidated sets of cottages. The subsidy for flats might induce an unhealthy number of flats per acre. It would be eighteen months at the earliest from the passage of the Bill before anything material happened under it.

Sir FRANCIS FREMANTLE said Queen Elizabeth recognized in 1580 in her proclamation against tenements that overcrowding had to be dealt with. Three and a half centuries had passed, and there was still the idea that the subject could be dealt with simply by quantitative housing. That, under the existing law, had been accompanied by a definite improvement. The decade between 1911 and 1921 showed an increase of two houses for every thirteen additional persons. The last decade showed two houses for every three additional persons. In 1901 the average number of persons to each occupied house was 5.2. In 1931 it was 4.4. The proportion of the population living over two to a room in England and Wales had been reduced, but not sufficiently. The one thing new and invaluable in the Bill was the laying down of a standard of overcrowding and the provision of power and machinery to enforce it, and to provide houses for the displaced people. It was a mistake to say the standard should be higher. Many of the most hard-pressed local authorities would find even this standard impossible to work to. As regarded the area of accommodation in a house, suitability did not depend so much on cubic feet or superficial feet as on the amount of air coming into the rooms. Therefore the question of inspection and management must not be overlooked. The success of the Bill would largely depend on frequent inspection by sanitary inspectors. There was a strong case for having county sanitary inspectors, making the appointment of such officials compulsory, just as county medical officers of health were compulsory. There ought to be a county sanitary inspector as a guide to local inspectors. There might be some difficulty in getting medical

officers to be keen on a scheme dealing with houses with only two bedrooms. Small families had to be provided for, but failing good administration there would be difficulty in preventing houses with only two bedrooms from being overcrowded.

No Decentralization of Industry and People

Sir JONAH WALKER-SMITH contended that it was undesirable to fix any arbitrary standard of overcrowding or to make a standard statutory. The minimum would become the standard, which would be difficult to raise once it received statutory effect. The Minister put the unpleasant duty of inquisition and inspection on the local authorities, but would use his medical officers of health to tell him whether the local authorities carried out the inspection in precisely the manner he anticipated. He condemned the tenement proposals. The rents of central tenements would be high, and Parliament would induce people and industries to remain in central, unhealthy surroundings when every effort should be made to decentralize. Sir ROBERT ASKE said that in Newcastle 63,000 people (over 23 per cent.) lived overcrowded. That was the general standard on Tyneside. While it would be necessary for local authorities to erect blocks of flats in the centre of towns, all the local authorities in the North would prefer to build single houses on the new housing estates. He knew in his own experience the difficulty of getting small houses suitable for small families, who constituted half of all the families in most large-sized towns. Mr. BERNAYS said that a doctor, examining candidates for life insurance, lately told him that the percentage of uninsurable lives entirely depended on the kind of houses from which the persons came. He had advised against the establishment of an insurance scheme for workers in a departmental store in London, because of the first sixteen workgirls he examined he could only pass three as first-class lives. The rest suffered from incipient tuberculosis, weak heart, malformations, or various internal disorders, and the doctor said the root reason was the conditions under which the girls lived—that they had not the necessary light, air, and space.

Mr. E. G. HICKS said the Bill did not go to the root of the matter. Poverty alone created bad housing. What was worth while in the Bill was the call for an intimate survey of housing conditions. The standard of overcrowding should be reckoned solely on the size and number of bedrooms, and instead of building up in the air they should encourage the decentralization of industry.

Government Reply

Mr. GEOFFREY SHAKESPEARE, replying for the Government, said the Bill had received an encouraging reception. The mere provision of new houses would not overcome overcrowding. To touch the slum question, 300,000 houses were needed, and that would not relieve overcrowding. The housing expert of the Ministry calculated that in 1921 600,000 new houses were needed. In 1931 the same total was required, although in the decade 1,700,000 houses had been built. The second method for relief of overcrowding was the driving of great roads outwards and building new estates. The third was direct attack by a controlled subsidy for the specific purpose of decrowding overcrowded persons and rehousing them where they ought to be rehoused. People insisted on living near their work. It was purely a psychological problem. Dr. SALTER: It is economic, not psychological. Mr. SHAKESPEARE went on to say that the survey of overcrowding could start at once. Except in some of the big boroughs in London the survey would take a long time, but by the time the Bill was through the House most local authorities would know the measure of their overcrowding, and could then start to build against it. Under the Bill any district in London could be developed as Kingsway was, but without coming to Parliament for special powers. Whole districts in Paddington, Bethnal Green, and Stepney could be redeveloped and replanned under the clause. If the House found that the clause was drafted too closely the Government was prepared to alter it. Alluding to the slum-clearance campaign, Mr. Shakespeare said it had already rehoused a previously slum-dwelling population equal to that of Canterbury, Margate, and Hastings.

The Bill, as reported above, was then read a second time by 291 to 46, and committed to a Standing Committee.

Osteopathy Bill: Select Committee Personnel

Viscount ELIBANK gave notice that in the House of Lords on February 6th he would move that the following Lords be appointed as the Select Committee on the Registration and Regulation of Osteopaths Bill: Viscount Esher, Viscount Elibank, Lord Redesdale, Lord Carnock, Lord Dawson of Penn, Lord Amulree, and Lord Marley.

Malaria Outbreak in Ceylon

Replying to Sir William Davison, on January 30th, Sir P. CUNLIFFE-LISTER stated he had received regular telegraphic reports from the Governor of Ceylon during the epidemic of malaria. The epidemic showed a distinct decline in most districts. The Ceylon State Council a year ago rejected a Mosquito Ordinance, the object of which was to prevent the spread of malaria, but that measure could not have prevented the severity of the recent outbreak, which appeared to have been largely due to exceptional climatic conditions in an area in which malaria was not endemic. Prompt measures appeared to have been taken in regard to treatment of the sick and general relief. The severity of the present outbreak directed renewed attention to the importance of framing a comprehensive plan of preventive activity. The Colonial Office would give to, or secure for, the Ceylon Government all help possible in such an effort.

Alcohol in Road Accidents: B.M.A. Consulted

Mr. HORE-BELISHA told Mr. Rhys Davies on January 30th that he would invite the British Medical Association to say whether it could usefully make any observations on the place of alcohol in the causes of road accidents.

In reply to Mr. Rhys Davies on January 30th, Sir JOHN GILMOUR stated that if circumstances suggested that a driver who had been involved in a traffic accident was under the influence of drink or drugs it was the well-established practice for the police to arrange for his examination by a police surgeon, and also, if the person concerned wished it, by a doctor selected by himself. Where a death resulted from the accident the result of the police surgeon's examination would be made available at the inquest, and also in any criminal proceedings.

Medical Trade Union and Local Authorities

Sir HILTON YOUNG told Mr. Hall Caine on January 31st that he had received a communication from one local authority in regard to the request of the Medical Practitioners' Union that local authorities should give their organization recognition. He did not consider it was a matter on which it was properly his function to give advice.

Medical Students in Maternity Hospitals

Sir HILTON YOUNG stated in reply to Mr. Wilmot, on January 31st, that he had not received any information to the effect that the training of medical students in maternity hospitals was often conducted without due regard to the welfare and comfort of the patients who were attended by students. The continued and increased popularity of maternity hospitals would not seem to point to any lack of consideration in the treatment of their patients. He had, however, no control over the arrangements made for the training of medical students.

Treatment of Deafness by Unqualified Persons

In reply to Sir Francis Fremantle, on January 31st, Sir HILTON YOUNG stated he was aware, from the late Dr. Eichholz's report on the deaf in England and Wales, that persons having no suitable qualifications were posing as specialists and purporting to treat and cure deafness and head noises, and that many persons suffering from such afflictions were being put to loss and possibly physical damage by the treatment given by these unqualified practitioners. He had no power to protect the deaf from exploitation, but he understood that the National Institute for the Deaf was

always prepared to advise those who were deaf on suitable aids to hearing. He would take into consideration the suggestion that approved societies which paid part of the cost of appliances for the deaf should be urged to send their cases to the Institute.

Drunkenness in 1933.—Replying to Dr. Salter, on January 31st, Sir JOHN GILMOUR said the convictions for drunkenness in the county of London in 1933 numbered 13,140. Figures for 1934 were not yet available. Separate figures for the individual petty sessional divisions in the county of London were not available, and could not be obtained without considerable expenditure of time and labour.

The M.O.H. and Medical Examinations for Superannuation.—In reply to Captain Elliston, on January 31st, Sir HILTON YOUNG said the carrying out of medical examinations under the Local Government and Other Officers' Superannuation Act was not one of the duties imposed on a medical officer of health by Statute or Order, but it was not uncommon for this work to be performed by medical officers of health. He had no information whether any medical officers of health had been or were permitted to refuse to make such examinations in cases where no mention was made of doing so in the terms of appointment.

Miners' Nystagmus in 1933.—Replying to Mr. T. Smith, on January 31st, Sir JOHN GILMOUR stated that during 1933 certifying factory surgeons in Great Britain gave 1,645 certificates of disablement in respect of miners' nystagmus. Figures for 1934 were not yet available.

Domestic Smoke Elimination.—Replying to Mr. Rhys Davies, on January 31st, Sir HILTON YOUNG said he had received representations from some local authorities who felt that progress towards the elimination of domestic smoke was too slow, but he did not think it practicable to lay down restrictions for the elimination of domestic smoke as a condition of future housing subsidies. Mr. SHAKESPEARE, answering a further question, on February 4th, said the Minister of Health had considered representations from the National Smoke Abatement Society and from local authorities on the emission of grit from chimneys where pulverized coal was used.

Medical News

The annual dinner of the Glasgow and Aberdeen Universities North-East of England Club will be held at the Royal Station Hotel, Newcastle-upon-Tyne, on Friday, February 15th, at 7.15 p.m. The guests will be: Mr. A. Noel Skelton, M.P., one of the members for the Scottish Universities and Under Secretary for Scotland; Professor J. Shaw Dunn of Glasgow University; and Mr. Hopkins, representing the Aberdeen Students Representative Council. Any graduate will be welcomed, and tickets (10s.) may be obtained from Professor D. Burns, University of Durham College of Medicine.

H.R.H. Princess Louise, Duchess of Argyll, is patron of a luncheon to be given in aid of the Willesden (V.A.D.) special surgery clinic and physical treatment centre on Thursday, February 14th, at the Hotel Belgravia, Grosvenor Gardens, S.W. Among the speakers will be Dr. W. J. O'Donovan, M.P., and Dr. T. Pearse Williams. Funds are needed for the development of this centre, which for ten years past has provided specialist advice and massage, light, heat, electricity, and gymnastic treatments, at fees they can afford, to persons of moderate and small means, on the recommendation of their doctors. Applications for tickets, at 5s. 6d. each, should be made at once to Mrs. Aubrey Richardson, at 159, Willesden Lane, N.W.6.

The Joint Tuberculosis Council has arranged a post-graduate course on chest diseases, to be given by the medical and surgical staff of the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E., from February 25th to March 2nd. The fee for the course is £3 3s., and all inquiries should be addressed to the honorary secretary for post-graduate courses, Joint Tuberculosis Council, Pembury, The Drive, Rickmansworth, Herts.

The Fellowship of Medicine (1, Wimpole Street, W.) announces that lectures on jaundice will be given at 11, Chandos Street, W., on February 15th, at 4.15 p.m., and on anaemia on February 22nd and March 1st. Demonstrations on helminthology as it affects the clinicians will be given at the Wellcome Museum of Medical Science on February 14th, at 3 p.m., and on February 21st on tumours of the stomach. Forthcoming special courses include: an evening clinical and pathological M.R.C.P. course, at the National Temperance Hospital, on Tuesdays and Thursdays at 8 p.m., from February 19th to March 7th; medicine and surgery, at the Prince of Wales's General Hospital, from February 25th to March 9th; orthopaedics, at the Royal National Orthopaedic Hospital, from March 11th to 23rd; and week-end courses on children's diseases, at the Princess Elizabeth of York Hospital for Children, March 2nd and 3rd; on clinical surgery, at the Royal Albert Dock Hospital, March 9th and 10th; and chest diseases, at the Brompton Hospital, March 23rd and 24th. Courses, demonstrations, lectures, etc., arranged by the Fellowship are open only to members and associates.

A David Anderson-Berry gold medal, together with a sum of money amounting to about £100, will be awarded in July next, by the Royal Society of Edinburgh, to the person who, in the opinion of the council, has recently produced the best work on the nature of x rays in their therapeutical effect on human diseases. A similar award will be made every three years.

On February 1st, at Tilley's Restaurant in Newcastle-upon-Tyne, Professor G. Grey Turner was entertained to dinner by his ex-house-surgeons at the Royal Victoria Infirmary. Seventeen were able to attend—some travelling a considerable distance. A most enjoyable evening was spent. The health of the guest was proposed by his first house-surgeon (Mr. W. E. M. Wardill), and then followed the presentation of a silver salver inscribed with the signatures of his thirty-six house-surgeons. In a reply of thanks Professor Grey Turner expressed himself delighted, and said it was perhaps the most pleasing function he had attended. The evening ended with each host relating, in rotation, some memorable incident which occurred during his association with the professor. Great regret was expressed at Professor Grey Turner's departure and good wishes for his future.

A fund has been opened in memory of Dr. Vincent Coates, who died last year at the age of 45. The fund will be devoted to the improvement of the Royal Mineral Water Hospital at Bath, for which Dr. Coates did much valuable work.

The issue of *Paris Médical* for January 19th is devoted to dermatology, and the issue of the *Deutsche medizinische Wochenschrift* for January 25th is devoted to obstetrics and gynaecology.

We learn from the *Yorkshire Post* that over 26,000 forms giving consent to the immunization of Leeds school children against diphtheria have been received. The health committee of the city council is to ask the sanction of the council to appoint a temporary medical officer to assist in the immunization of these children. Mr. George Brett, chairman of the health committee, says: "The cost of this scheme will be little compared with the cost of treating diphtheria patients."

According to the *Journal of the American Medical Association* for January 12th the University of Pennsylvania has announced the adoption of a policy prohibiting the patenting for profit, by any one connected with it, of any invention or discovery affecting the public health. Neither the University nor any one in its employ will be permitted to patent new drugs, processes, or apparatus invented or discovered that are intended for medical or surgical use. It has never been the practice of the University to patent such discoveries, but there has never before been a definite ruling against it.

We are asked to state that applications for admission to the London (Royal Free Hospital) School of Medicine for Women in October next must be received not later than March 1st

The prize of £15 offered by the *British Journal of Anaesthesia* for the best essay sent in on any subject directly concerned with the physiology or practice of anaesthetics has been awarded to Drs. Wesley Bourne and B. R. Raginsky of McGill University, Montreal. The title of their essay is "Vinyl Ether (Vinethene) Anaesthesia in Dogs: Effects upon Normal and Impaired Liver," and it is published in the current number of the journal.

During the international motor exhibition in Berlin, from February 14th to 24th, an office will be opened at Kaiserdamm 95 to supply information to medical motorists.

The thirty-fifth anniversary of the foundation of the Société des Chirurgiens was celebrated in Paris on January 24th in the presence of M. Albert Lebrun, President of the French Republic, M. P. E. Flandin, the Prime Minister, M. Pierre Laval, the Member for Foreign Affairs, and numerous other notabilities.

Dr. Pierre Janet, professor of psychology at the Collège de France, has been made a member of the Institut and a Commander of the Legion of Honour.

A statue of Hippocrates in Naxos marble, copied from that recently discovered at Cos, has been erected in front of the entrance to the laboratories of the Athens Faculty of Medicine.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

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QUERIES AND ANSWERS

Diphtheria Carriers

"P. G. D." would be glad to know of any treatment—local or otherwise—likely to convert a positive to a negative swab in a diphtheria carrier. Tonsillectomy has been considered and rejected as unjustifiable. The patient is a girl aged 12 years.

Buccal Ulcers

"J. B. J." writes: I would like to glean any information regarding the treatment of small and recurring ulcers in the mouth. What line of treatment is likely to prevent them? For years I have been troubled with these, and have had many wretched times with them. Teeth are good, tongue always quite clean, diet is plain. I have tried all textbook remedies, but have come to the conclusion that little difference is made by them.

Oedema of One Arm: ? Cause

Dr. H. L. WINTER (London, W.1) writes in reply to Dr. H. B. A. Ratcliffe-Densham (*Journal*, January 19th, p. 137): I suggest trying a method which I found years ago in the German literature, and which was very good in treating similar conditions of the lower extremities. It consists of (1) bandaging with an elastic bandage, and (2) daily fomentations with a paste of pulverized semen sinapis and warm tap-water, beginning with five minutes and by and by prolonging the treatment up to two hours.

Niemeyer's Pill

Dr. ANDREW TRIMBLE (Chief Tuberculosis Officer, Belfast) writes in reply to Dr. Archibald Fairlie (*Journal*, January 26th, p. 188): In his *Clinical Lectures on Pulmonary Consumption* (New Sydenham Society, London, 1870) Niemeyer gives the composition of the pill exactly as it is given in Sir William Whitla's *Pharmacy, Materia Medica, and Therapeutics*. It is quite true that the *B.P.C.* gives Baly's and Guy's pill as synonyms of Niemeyer's, but this, I think, is wrong.

LETTERS, NOTES, ETC.

Herpes Zoster and Varicella

Dr. H. D. HAWORTH (Nelson, Lancs) writes: We are accustomed to believe that cases of herpes zoster in adults occur more frequently when varicella in children is occurring in the same district. I have never met with a case of herpes zoster that could be traced as one actually infected from a case of varicella, or vice versa. In October, 1934, I came across a unique association of these two diseases. A married woman, aged 34, developed a typical attack of herpes zoster, the clumps of vesicles appearing on the anterior surface of one thigh and just below the level of the knee. During the third week of this attack the woman's son, aged 1 year and 10 months, developed a typical attack of varicella of a mild type. The following week the woman's daughter, aged 4, also developed a typical attack of mild varicella. The family are superior working class, living in a modern house in healthy surroundings. The most careful inquiry reveals no evidence of exposure to infection by varicella. One is therefore driven to the conclusion that the children were infected from their mother. In other words, the same infection caused the eruptions of herpes zoster in the mother and varicella in the children. The association of these two diseases in the same house is so unusual that I thought it worth while to record the occurrence.

"Receding in all Directions"

Dr. W. L. ENGLISH (Crewe) writes: With reference to Admiral Beadnell's remarks in the *Journal* of January 19th (p. 132) on the expanding universe, we are apparently told that any nebula, in any direction whatever, is receding from us at some 24,000 miles per second. If a nebula is receding from us, we are surely receding from it at the same speed—that is, we are receding in all directions at a rather incredible speed, which seems to me rather incredible. Curiously, the next letter in your most readable and interesting Correspondence section has the heading, "We Have Reason to Think . . ."

"Giraffe Women"

Dr. E. D. B. WOLFE (London, W.2) writes: May I point out an error in the description of the "giraffe women" appearing under the heading of "Human Freaks and Oddities" in the *Journal* of January 26th. These people are not found in Penang Island or in the Malay Peninsula. The Palaungs are a people of Southern Burma.

Diagnostic Sign in Fibrositis and Myalgia

Dr. E. SAKOSCHANSKY (Southampton) writes: In cases of myalgia, fibrositis, and similar conditions I have often found tenderness in the second interosseous space on the dorsum of either or both hands. The tender spot is usually found on the radial side of the third metacarpal bone in its upper third, and sometimes a definite and tender nodule is felt. I have sometimes found it of diagnostic help. In obscure cases of myalgia, etc., this tender spot, or better still the nodule, have helped to clear up a doubtful case. Having found it, other nodules can frequently be found in the muscles of the neck, etc. I shall be glad to know whether others may find this sign of some use.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 46, 47, 48, 49, 52, and 53 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 50 and 51.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 52.